



Calhoun: The NPS Institutional Archive DSpace Repository

Theses and Dissertations

1. Thesis and Dissertation Collection, all items

1979

Identification of variables related to the reenlistment intentions of Navy cryptologic technicians (maintenance)

O'Neill, Richard Patrick; Mirra, Anthony Henry

Monterey California. Naval Postgraduate School

<http://hdl.handle.net/10945/18747>

This publication is a work of the U.S. Government as defined in Title 17, United States Code, Section 101. Copyright protection is not available for this work in the United States.

Downloaded from NPS Archive: Calhoun



<http://www.nps.edu/library>

Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community.

Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943

IDENTIFICATION OF VARIABLES RELATED TO THE
REENLISTMENT INTENTIONS OF NAVY CRYPTOLOGIC
TECHNICIANS (MAINTENANCE)

Richard Patrick O'Neill
Anthony Henry Mirra

DUDLEY KNOX LIBRARY
NAVAL POSTGRADUATE SCHOOL
MONTEREY, CA 93940

NAVAL POSTGRADUATE SCHOOL

Monterey, California



THESIS

IDENTIFICATION OF VARIABLES RELATED TO THE
REENLISTMENT INTENTIONS OF NAVY CRYPTOLOGIC
TECHNICIANS (MAINTENANCE)

by

Richard Patrick O'Neill

Anthony Henry Mirra III

December 1979

Thesis Co-Advisors:

R. S. Elster
D. N. Rousseau

Approved for public release; distribution
unlimited

T19199

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) IDENTIFICATION OF VARIABLES RELATED TO THE REENLISTMENT INTENTIONS OF NAVY CRYPTOLOGIC TECHNICIANS (MAINTENANCE)		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis; December 1979
7. AUTHOR(s) Richard Patrick O'Neill Anthony Henry Mirra III		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		12. REPORT DATE December 1979
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) Naval Postgraduate School Monterey, California 93940		13. NUMBER OF PAGES 93
16. DISTRIBUTION STATEMENT (of this Report)		15. SECURITY CLASS. (of this report) Unclassified
		16a. DECLASSIFICATION/DOWNGRADING SCHEDULE
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES Travel funds for data gathering and interview trips were provided by Commander, Naval Security Group.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Reenlistment intentions of technical Navy enlisted personnel; retention of highly trained personnel; attrition in the military.		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The research detailed in this thesis was conducted in order to examine the reasons why highly trained enlisted Navy personnel of the Cryptologic Technician (Maintenance) rating leave or stay in the Navy. Another objective was to develop a model of the factors in the individual's reenlistment decision process to enable Naval Security management to construct action plans aimed at solving CTM retention problems. Reenlistment intent of the individual was used as the		

UNCLASSIFIED

~~SECURITY CLASSIFICATION OF THIS PAGE/Initial Date Entered~~

dependent variable. Principle components factor analysis and linear regression were employed to generate discriminating factors which provided insight into career retention behavior. Intrinsic job satisfaction, the impact of military life on family or social status, and an extrinsic factor including satisfaction with fringe benefits were found to be highly correlated with personnel retention.

IDENTIFICATION OF VARIABLES
RELATED TO THE REENLISTMENT
INTENTIONS OF NAVY CRYPTOLOGIC
TECHNICIANS (MAINTENANCE)

by

Richard Patrick O'Neill
Lieutenant, United States Navy
B.A., Holy Cross College, 1969

and

Anthony Henry Mirra III
Major, United States Army
B.A., Temple University, 1974

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
December 1979

ABSTRACT

The research detailed in this thesis was conducted in order to examine the reasons why highly trained enlisted Navy personnel of the Cryptologic Technician (Maintenance) rating leave or stay in the Navy. Another objective was to develop a model of the factors in the individual's reenlistment decision process to enable Naval Security management to construct action plans aimed at solving CTM retention problems. Reenlistment intent of the individual was used as the dependent variable. Principle components factor analysis and linear regression were employed to generate discriminating factors which provided insight into career retention behavior. Intrinsic job satisfaction, the impact of military life on family or social status, and an extrinsic factor including satisfaction with fringe benefits were found to be highly correlated with personnel retention.



TABLE OF CONTENTS

I.	INTRODUCTION -----	6
II.	REVIEW OF THE LITERATURE -----	10
	A. MOTIVATION -----	10
	B. INTENT AS A PREDICTOR OF REENLISTMENT -----	12
	C. JOB SATISFACTION -----	14
	D. ECONOMIC INCENTIVES -----	15
	E. STATISTICAL APPROACHES OF RECENT STUDIES -----	18
III.	METHODOLOGY -----	22
	A. INTRODUCTION -----	22
	B. IDENTIFICATION OF POPULATION -----	23
	C. SURVEY METHODS -----	24
	D. STATISTICAL APPROACH -----	30
IV.	RESULTS AND DISCUSSION -----	34
	A. INTRODUCTION -----	34
	B. DEMOGRAPHY OF NSGCS SAMPLE -----	34
	C. RELATIONSHIPS OF VARIABLES WITH INTENT -----	41
	D. THE REGRESSION MODEL -----	49
	E. RESULTS OF INTERVIEWS AND OPEN-ENDED QUESTIONS --	51
V.	CONCLUSIONS AND RECOMMENDATIONS -----	55
	A. INTRODUCTION -----	55
	B. CONCLUSIONS -----	55
	C. RECOMMENDATIONS -----	57
APPENDIX A:	Naval Security Group Career Survey -----	64
APPENDIX B:	Stations/Commands in Survey Sample -----	73

APPENDIX C: Excerpts of Narrative Comments -----	74
APPENDIX D: Descriptive Statistics of Demographic and Non-attitudinal Variables -----	80
APPENDIX E: Variables Differentiating Among Intent Categories -----	81
APPENDIX F: Sample Principle Component Factor Analysis --	82
APPENDIX G: Composite Factors and Contributing Variables -----	84
APPENDIX H: Results of Regression Analysis -----	88
APPENDIX I: Variables Significantly Correlated with Intent to Reenlist -----	89
LIST OF REFERENCES -----	90
INITIAL DISTRIBUTION LIST -----	93

I. INTRODUCTION

This thesis focuses on personnel retention in a highly technical rating; its objectives are to review the general subject of military retention and probe in depth the reenlistment problems particular to a specialized skill rating. As a Navy built around ever-increasingly sophisticated electronics systems pushes into the decade of the eighties, the prospect of an undermanned force of skilled technicians to maintain that equipment is unthinkable but possible. Although the Chief of Naval Operations (CNO), Admiral Thomas B. Hayward, declared upon assuming his position that retention of quality personnel was his foremost priority, the emigration of technically trained petty officers from the Navy has continued, according to the Navy Manpower and Personnel Center's (NMPC) FY 78 retention figures.

Rear Admiral Eugene S. Ince, Commander Naval Security Group (NSG) Command, similarly recognized the general problem of retention and its unique aspects which pertained to the skilled enlisted personnel under his command. In 1978, RADM Ince stated his interest in a study to be conducted at the Naval Postgraduate School to determine the scope of the present and potential reenlistment shortfalls faced by his community and the identification of associated reenlistment decision variables within his span of control.

One of the six ratings which comprise the enlisted force of NSG is the Cryptologic Technician Maintenance (CTM) rating.

In consonance with the overall problem of the migration of skilled petty officers and the unique problems faced by NSG, the CTM rating lends itself exceedingly well to an indepth study. As part of the technically sophisticated NSG, they are members of a distinct community which maintains its own bases around the world and command structure with a Washington-level headquarters. Extensive training in electronics and special equipments is given to all incoming personnel and accounts for well over one year of schooling per person. The amount of training received requires these personnel to obligate for a minimum first enlistment of six years (6 YO). Additionally, this group is composed predominantly of white males who have earned high school diplomas, with significant numbers having attended college. Over the years, the NAVSECGRU has played a key role in fleet operations and has shifted from being largely a shore based community to that of a shipboard sensor as well, requiring first time deployments by both junior and senior personnel. The May, 1979, CREO listings indicated that CTMs at the E-4/5/7 pay grades are less than 80% manned while E-6 is slightly above that at 80-89% strength.¹ Concurrently the basic electronics school for CTM personnel is not placing enough qualified technicians in the field, thus exacerbating

¹ Career Reenlistment Objectives (CREO) program tracks Navy enlisted manning levels and designates the levels necessary at each pay grade to meet ideal force requirements. CTMs fall into CREO group A (most critical-less than 80% manned). BUPERSINST. 1133.25D, 26 August 77.

the manning level problem, and placing greater-than-ever importance on the career motivation of each individual petty officer.

Given the extraordinary time and cost necessary to train a replacement,² any retention or input shortcoming can result in diminished organizational effectiveness and an otherwise unnecessary expenditure of funds. According to the Senate Armed Services Committee 1977 report on the All Volunteer Force, personnel costs account for approximately 58% of the total Department of Defense (DOD) budget; continued retention problems may well require increased funding at the expense of weapons systems and platforms and may reduce the Navy's ability to perform its mission.

A RAND study of the returns to military and civilian training (Norrbom, 1976) indicated that 75% of the military separates who received military electronics schooling took postservice jobs in electronics. The Bureau of Labor Statistics 1978 Outlook Handbook indicates that employment opportunities for technicians are excellent, with starting annual salaries in the 12-15 thousand dollar range the national average. Additional benefits such as quality medical and dental plans are also available in the private sector at low cost to the individual.

² Life Cycle Navy Enlisted Billet Costs FY-79 estimates replacement costs for CTM 2 with five years service as \$90,703 and one CTM 1 with ten years service as \$157,290. DPRDC, March 79.

In the light of the makeup of the CTM rating, and the presently insufficient manning levels, the objective of this thesis is to study a key segment of the CTM community, examine the reasons CTM personnel stay or leave the Navy and develop a model of the factors in the individual's retention decision process. If the Navy is to confront and overcome its enlisted technician problem, greater understanding of these factors is mandatory, as is a program to effectively monitor and predict turnover in the organization.

The next section of this thesis will present a review of retention and turnover studies conducted in the military and civilian occupational settings.

II. REVIEW OF THE LITERATURE

Retention of qualified personnel is a problem of magnitude in both the military and civilian sectors. The effects upon an organization of an unacceptably high rate of turnover can be debilitating in terms of lowered morale, wasted recruiting and training investment, and reduced organizational effectiveness. Given that the problem exists in the Navy in an All-Volunteer Force setting, and that the service has limited resources with which to counteract this condition, causes and cures must be aggressively explored in order to ensure an adequate and stable force.

Two major reviews of the literature dealing with turnover, representing both the civilian (Lawler, 1973) and the military (Hand, Griffeth, and Mobley, 1977) spheres have been examined. Consistent throughout these reviews are three interdependent types of variables as possible causes of turnover: general employment conditions, the importance one places on pay, and the individual's satisfaction with his job.

A. MOTIVATION

Job satisfaction/dissatisfaction as motivation to stay or leave a job was examined by Maslow (1954) in his theory of the hierarchy of needs. He indicated that once a need is satisfied it ceases to act as a behavior determinant. However, an unsatisfied need, whether it be a higher-order need or a lower-order need formerly fulfilled and once again unsatis-

fied, will, according to Maslow, drive behavior. Herzberg (1957) supported the need fulfillment theory and distinguished between two sets of incentives found in job content: satisfiers and dissatisfiers. Satisfiers or "Motivators" are related to increased job satisfaction and personal growth; factors cited as Satisfiers were recognition, advancement, challenge and responsibility. Dissatisfiers or "Hygiene Factors" are basic personal needs which do nothing to increase job satisfaction, but work toward enhancing the social and personal aspects of life. As such these factors include job security, working conditions, supervision, and pay. Herzberg concluded that workers not satisfied with the state of their Hygiene Factors felt these as the primary source of job dissatisfaction; lack of dissatisfaction with Hygiene Factors had no effect in increasing job satisfaction, but the perception of Motivators present in the job environment was directly related to job satisfaction.] Vroom (1964) postulated that job satisfaction could be viewed as "expected" or anticipated need satisfaction. Job satisfaction is measured by the total amount of valued outcomes or rewards available to the employee. Vroom, Herzberg and Maslow concur that behavior is not guided by satisfied needs, but that it is the unsatisfied needs which are elemental.

The Hand, Griffeth and Mobley review included seventy-nine studies conducted in this decade. Studies were categorized by the variables identified in each one; these variables were:

Independent Variables: Economic/Incentive, Organizational Practices, Climate, Job Content, Atti-

tudes and Satisfaction, Intentions, Expectations, Demographic and/or Biographic, Psychological Variables, Aptitude Scores, Performance.

Dependent Variables: Original Choice, Attrition Prior to Completion of Obligated Service, Actual Reenlistment, Intention or Attitude Toward Reenlistment, Completion of First Term and Recommended for Reenlistment, Other Forms of Withdrawal, Studies Unrelated to Withdrawal Behavior.

One of the basic conclusions drawn from the review is that enlistment, reenlistment and/or the withdrawal process is clearly multivariate in nature. With the exception of economic incentives, the remaining independent variables accounted for small amounts of variance.

B. INTENT AS A PREDICTOR OF REENLISTMENT

To date, two basic measures have been used to examine reenlistment rates in Navy research: (1) stated reenlistment intent, which is sometimes compared point with actual reenlistment behavior at Expiration of Active Obligated Service (EAOS), and (2) the reenlistment rate calculated by the DOD formula or the Navy formulas (4 YO and 6 YO groupings).³ In the case of 6 YO programs, individuals who continue after completing the initial four year contract (a precondition for

³ DOD Formula: Reenlistment Rate = $\frac{\text{Reenlistments} + \text{Bonus Extensions}}{\text{Eligibles} + \text{Bonus Extensions}}$

Navy 4 YO + 6 YO: Reenlistment Rate = $\frac{\text{Reenlistments} + \text{Bonus Extensions}}{\text{Eligibles} + \text{Intangibles} + \text{Bonus Extensions}}$

Navy 4 YO only: Reenlistment Rate = $\frac{\text{Reenlistments}}{\text{Eligibles} + \text{Ineligibles}}$

training) are counted as reenlistees whether they effect their extension for two years and then leave, or actually reenlist for a period of time greater than two years. There is then a question whether those effecting the extension should be included with so-called "careerists". As Gloria Grace (1976) and Haber and Stewart (1975) note, this question and that of comparing rates for 4 YO and 6 YO personnel pose statistical difficulties in the interpretation of reenlistment rate and is sometimes too time-consuming. Additionally, the formulas can be confusing or misleading.

Studies utilizing "intention" as the dependent variable have demonstrated robust predictive ability. Kraut (1975) consistently found significant correlations between expressed intent to stay and subsequent employee participation. Lockman, Stoloff and Allbritton (1972), found a zero order correlation of 0.44 between reenlistment intent and reenlistment decision of Navy enlisted personnel during the final year of their first term. Such findings were far stronger than relationships between expressed satisfaction and continued participation. Reenlistment intentions have generally become accepted as one of the best substitute measures for actual reenlistment behavior (Grace, Holoter and Soderquist, 1976).

Bruni, Jones and James (1975) found that stated intentions worked as a predictor of reenlistment as far as two years from the End of Active Obligated Service (EAOS). The literature, however, does not in general support the stability of reenlistment intentions for periods greater than twelve months

before the EAOS. Additionally, Bruni et al. noted that although a decision was made early in the career by many, the less certain or undecided sailor was found to be more influenced by events closer to the EAOS date. A Rand study of Air Force Avionics Technicians (Perry, 1977) suggests that motivations and expectations are altered or reinforced by experiential input including job content and economic factors. The Perry study asserts, "through this series of recursive and feedback relationships," the propensity to reenlist can continually change, especially during the first term. LaRocco, Gunderson and Pugh (1975) noted that the end of the first enlistment is a crucial period in that almost all of those who enlisted a second time consider themselves career oriented.

C. JOB SATISFACTION

Carlisle (1975) observed that career satisfaction was the one common factor which could be correlated with reenlistment for all groups studied. In a report on Marines in the telecommunications field, he defined career satisfaction for first term personnel as a function of their perception of their work (e.g. the work itself, recognition, responsibility and growth) and a feeling of worthwhile accomplishment.

In a multivariate determinant study of organizational withdrawal, Porter and Steers (1973) concluded perceived equity of rewards was a significant factor in a termination decision. If satisfaction with the work environment or "climate" (an individual's perceptions or descriptions of their current job assignment) was rated by first termers as being

high, over half of the first term group would stay (Stoloff, Lockman, Allbritton and McKinley, 1972). A key element in this study was the need for greater feelings of freedom and control over one's life than the first termer was currently perceiving.

Satisfaction may also be expressed in terms of amount of spousal support and feelings of job security. While job security becomes an important aspect for married personnel, especially those with children, it increases in importance later in the career. The younger man or first termer and his wife perceive a relative lack of control over the course of life when compared to their married civilian counterparts (Glickman, Goodstadt, Korman and Romanczuk, 1972). This feeling of powerlessness is increased when unable to make basic familial decisions because of circumstances under the control of the Navy. Control of fate as an important incentive was underscored by Frey and Goodstadt (1974).

D. ECONOMIC INCENTIVES

Employment alternatives in the civilian community were investigated by Dansereau, Cashman and Graen (1974). The likelihood of staying in the military was directly related to the scarcity of other alternative jobs. The results indicated that people tend not to leave their present jobs if they doubt the attainability of a comparable job elsewhere. These findings are firmly supported by Hulin (1966) and Waters and Roach (1971). Quigley and Wilburn (1969) concluded that reenlistment rates were sensitive to the national economy, in that any

decision to leave must in great part be based on a comparison of present wages, wages paid for comparable civilian employment and the opportunity of the individual to obtain that employment at EAOS. Hand, Griffeth and Mobley (1977) observed that the projected unemployment and the current ratio of military to civilian wages for specific specialties might be predictors of reenlistment. Kraut and Ronen (1975) found some incentives or satisfiers could be correlated with occupational groups. In general, earnings and skills or the amount of skill training received could be correlated with repairmen or technicians. The Carlisle (1975) study of non-reenlisting telecommunications repairmen indicated dissatisfaction with extrinsic factors such as pay. The effect of pay and bonuses on actual reenlistment is strong and positive. A 1% increase in pay resulted in a 3.3-4.7% increase in retention in a study conducted by Quigley and Wilburn (1969). Haber and Stewart (1975) found similarly that a 1% pay increase meant a 3% increase in reenlistment. Enns (1977) noted a 2% increase in reenlistment caused by a 1% bonus award increase. Each of these studies related pay to actual reenlistment behavior. Bruni, Jones and James (1975) concluded that sailors in technical ratings were least likely to reenlist even though such jobs might be seen as most challenging and rewarding. Hand, Griffeth and Mobley (1977) summarized the conclusions of studies relating economic variables and incentives to reenlistment intention by stating that although studies have shown

a relationship between pay and reenlistment, pay does not appear to be a potent cause of reenlisting.

Most of the studies which attempt to identify variables related to reenlistment have been characterized as taking either an econometric or psychological approach (Stoloff, et al., 1972). Until recently, few researchers jointly related these variables, primarily because of basic methodological differences inherent in traditional approaches. Stoloff notes, for example, that economic studies usually group samples of reenlistment decisions, and then model statistically the variance in the reenlistment rate for different incentive levels; however, this assumes that psychological variables are included in the error term or are homogeneous for a particular group. Psychological variables cannot generally be assumed to be homogeneous within a group, nor can they be used to group individuals because of the high degree of measurement error associated with them. Stoloff also comments on the difference in data collection techniques with economic studies using record and file searches subject to inherent grouping problems; psychological studies tend to use survey questionnaires which usually have prohibitive collection costs and which can yield data of questionable validity. Finally, the influence of manpower policy manipulation on individual psychological factors had been considered virtually impossible to measure. This combination of problems thus hindered studies using an interdisciplinary approach until survey and analysis tech-

niques were developed which measured the various components that are hypothesized to influence occupational choice (Perry, 1977).

E. STATISTICAL APPROACH OF RECENT STUDIES

Among the military studies performed since 1972 which attempt to empirically derive determinants of reenlistment intentions are those of Lockman, et al. (1972), Stoloff, et al. (1972), Perry (1977), and Miller, Katerberg and Hulin (1979). These studies report predictive accuracy uncommon in turnover research, which has lead to the hypothesis that the characteristics of the turnover process in the military are more visible or structured than in civilian organizations (Horn and Hulin, 1978). For example, members must make a specific decision at a predictable point in time and may require an additional fixed term commitment, all of which differ from the usual civilian decision process.

The Miller, et al., (1979) study is an evaluation of the Mobley, Horner, and Hollingsworth (1978) model of turnover. With attitude measures and turnover data from two samples of National Guard personnel ($n_1 = 235$; $n_2 = 225$), the model was tested using hierarchical regression procedures with double cross validation of regression coefficients derived from the independent samples. It was found that when three construct classes (job satisfaction, withdrawal cognition and career mobility) were used to represent the predictors, the results were consistent with predictions and the reliability of as-

sessing the hypothesized constructs was considerably better than that of the reliability of individual measures.

The Lockman and Stoloff studies (1972, 1971) were based on samples of large numbers of Navy personnel in various occupational specialties during their first term; one of the ratings was electronics operators/technicians. Both studies perform stepwise regression analysis on individual survey items and constructs derived from factor analysis, including economic, psychological and personnel characteristics. Lockman et al. (1972), found that expected proficiency pay, followed in order by familial considerations, job context and initial career intent were most highly correlated with the dependent variable, reenlistment. Stoloff (1971), on the other hand, found the highest correlations between reenlistment and the following factors: expected proficiency pay, initial intent, number of dependents and training opportunities/utilization of training.

The study most substantially related to the present investigation was that done by Perry (1977). It provides an excellent overview of the defense manpower problem, a review of previous approaches with emphasis on the Lockman and Stoloff (1972, 1971) studies, and an integrated empirical strategy for developing statistical models of the tendency to withdraw. The general statistical approach is comprised of a factor analysis to reduce the data base to a manageable set of variables, interactive regressive techniques with reenlistment intent as the dependent variable, and discriminant analysis to

derive a set of explanatory factors. This methodology was used to explain and predict the stated reenlistment intentions of a sample of 425 U.S. Air Force Avionics Technicians. Perry found that the most important factor contributing to reenlistment plans was career intent at the time of first enlistment. Additional factors of significance were job satisfaction as compared with perceived civilian opportunities, marital status, economic incentives, and finally, the desire not to supervise others, i.e., to remain a technician.

The review of the literature from the civilian sector generally, and the military sector specifically, lends weight to the conclusion that the reenlistment/withdrawal process is truly multivariate in nature. Several conclusions may be drawn from this research review. First, satisfaction with job content and context has been shown to be a major factor associated with reenlistment intent; hence, perceptions or expectations about the military environment are important influences in the reenlistment decision making process. Secondly, motivations and incentives for reenlistment of military personnel in skills readily marketable in the civilian economy may be different from those in civilian occupations. Thirdly, the intention to reenlist is generally a good predictor or surrogate for actual reenlistment behavior, assuming consideration is given to the length of time remaining to the decision point. The final point is that an integrated empirical strategy using a combination of statistical techniques may be used

to determine the significance and effect of some variables in explaining and predicting stated reenlistment intentions.

III. METHODOLOGY

A. INTRODUCTION

Consistent with the objectives of this study, an effort was made to employ well-documented techniques which would allow use of and comparison with the results of previous studies contained in the review of the literature. This led to an approach which combined survey research and interviews with multivariate data analysis. The following sections are a description of the Naval Security Group Career Survey (NSGCS) developed by the investigators, and the analytical methods used to extract information about the determinants of reenlistment intentions.

The survey instrument provided a tool for measuring attitudes and opinions of respondents as well as for recording reenlistment intent and demographic information. Responses to the NSGCS formed the source of the data base from which variables (attitudes and opinions) predictive of reenlistment intent were derived. Statistical analyses were used to determine the relationships of these variables with the stated reenlistment intentions of a CTM. The major aspects of this integrated statistical approach included:

- (1) Exploratory data analysis to detect patterns of interrelated survey items (e.g. factor analysis)

⁴A factor score is a linear combination of the original variables. It represents a construct that summarizes or accounts for the original set of observed variables.

- (2) Reliability analysis to evaluate the internal consistency of factor scores.
- (3) Regression analysis to develop a linear model relating the predictor variables to the dependent variable, reenlistment intent

The Statistical Package for the Social Sciences (SPSS, Nie, et al., 1975) was the principle source for the analytical tools used in the examination of the survey responses.

B. IDENTIFICATION OF POPULATION

Reenlistment rates are low, according to CREO, for both true first termers (personnel serving initial 6 YO with no extension or reenlistment put into effect) and those on their second or subsequent enlistments/extensions. In that much of the behavior of interest required time in service (TIS) beyond the range of most E-3/4 personnel (e.g., completion of "A" school, one or more duty stations with significant time applied, supervisory status), E-3/4 personnel were eliminated from the study sample. Most CTM personnel achieve E-4 status while attending the basic electronics "A" school, and E-5 by virtue of minimum TIS/time in grade (TIG) and by passing the E-5 rating examination. At the senior end of the enlisted rating structure are the E-7/8/9 Chief Petty Officers, whose intent to remain (taken as a group) is largely demonstrated. The groups of interest, therefore, are the E-5/6 petty officers; they are either first term personnel or individuals on subsequent enlistments, and serve primarily as equipment technicians and watch section supervisors. As the core of the petty officer structure, they represent a considerable invest-

ment in training time and dollars and a wealth of leadership potential. E-5/6 personnel represented 956 of a total CTM population of 1764 on June 1, 1979, and performed their jobs on ships and stations throughout the world.

C. SURVEY METHODS

In order to satisfy the objectives of determining the attitudes and perceptions of the population which might lead to a decision to make the Navy a career, several alternative methods of obtaining information were considered. Telephone and personal interviews alone were rejected for their inability to provide sufficient "hard" data on the numerous variables of intent, because of the time requirements of such an interview. A survey of former CTM personnel who had left the Navy, aimed at describing the decision process in leaving was rejected since the responses may shed light on the decision, but might not be of value of determining why others leave. Also, the logistics and time problem in locating such a sample rendered that approach impractical.

Results of the review of the literature suggested a framework for gathering statistical data to be used in constructing a descriptive and/or predictive model. By presenting the sample with a survey questionnaire and (as often as practicable) a follow-on interview, both structured questions and free narrative response could be accommodated. Survey questions would be posed linking variables expected to be influential in a withdrawal decision, while open ended interviews would allow for "fleshing out" of statistics, and corroborate-

tion of survey responses. Numerous survey forms exist which explore the areas of interest in this study; upon completion of a review of these questionnaires, it was decided that the Navy Aviation Career (NAC) survey (Cook, Naval Personnel and Research Development Center, (NPRDC), 1979) was best suited to serve as the basic model.

Developed by NPRDC with assistance from LCDR Virgil Cook while a student at the Naval Postgraduate School, the NAC was designed to obtain a full and accurate picture of the factors affecting the career motivation and career development of Naval Aviators. The areas covered by this questionnaire were:

- (1) most important factors influencing aviators to continue/not continue their careers
- (2) demographic information
- (3) career intent
- (4) information descriptive of most recent shore tour/sea tour
- (5) attitudes on operational Management in the Navy
- (6) comparability of Navy career with civilian career alternative
- (7) Navy Human Resources management (HRM) Survey questions
- (8) spousal attitudes
- (9) influence of thirty-eight variables on the individual's career choice

Questions in these key areas were then modified for use with enlisted technicians, with entire sections or questions within a section added, deleted or modified for use in the NSGCS.

Concurrently, a group of ten separated E-5/6 CTMs and ETs were interviewed by the present investigators in order to develop additional survey questions. In addition to gathering basic demographic data, questions in the interviews addressed:

- (1) What were your original career intentions on enlisting in the Navy?
- (2) What did you see as positive elements of service in the Navy?
- (3) What was the quality of supervision you received?
- (4) Did you have a job to go to directly after separation?
- (5) What were the most important factors in your decision to leave the Navy?

A draft questionnaire was finally constructed from the NAC, interviews with separatees, and suggestions from the staff at NSG Headquarters Command. CTM personnel stationed at Naval Security Group Activity Skaggs Island, California (n=21), and ETs (n=5) stationed at Fleet Numerical Weather Center, Monterey, California, were used to pilot test the NSG Career Survey (NSGCS). ETs were used when necessary during the early phases of survey construction because of the lack of sufficient numbers of CTs locally (in the Monterey area) and the similarities between the CTM and ET ratings, e.g., both electronics maintenance ratings, same basic "A" school, etc. After administering the survey to these groups, the subjects were interviewed to assist in debugging the questionnaire. Upon completion of this process, the final questionnaire was prepared.

Consisting of ten distinct sections, the NSGCS began with a request for demographic information. The demographic data were used to subdivide the sample and to provide further variables for study. Social Security numbers were requested in order to give the study a longitudinal capability; a check of those SSNs of personnel separating/reenlisting could be made periodically at the Headquarters Command level to determine the validity of the career intent statement (Q 14).⁵ Other sections included:

- (1) effect of bonuses
- (2) attitudes formed and environments encountered on the most recent shore/sea tour
- (3) perceptions concerning a Navy versus civilian career
- (4) spousal attitudes
- (5) the influence of multiple variables , e.g., Navy life in general and job security, on the subject's career intentions
- (6) descriptors of the sufficiency and types of training received
- (7) open ended questions requesting the most important factors influencing a CTM to continue/not continue his or her career until retirement
- (8) listing of the least/most preferred duty stations to which the subject might be assigned

The effect of bonuses upon people in this sample is of great interest to NSG management. Two types of monetary incentives were investigated, one for reenlistment and another

⁵The symbol (Q #) refers to a question from the NSGCS.

for isolated or sea duty. The former (Q 16) asked the subject:

"If the Navy offered what you considered to be a substantial career bonus to remain on active duty beyond the expiration of your obligated service, how would it affect your career intention?"

The latter (Q 17) asked:

"If, for budgetary limits, a career bonus were offered to only those M branchers on sea duty or isolated duty, how do you feel this would affect the M branch community?"

Work-related variables were examined in sections dealing with sea duty (deployed/not deployed) and shore duty. Requested to respond with a number from a scale of 1 to 5 (1 = very dissatisfied, 5 = very satisfied), subjects were asked about opportunity for challenge, freedom from work pressure, opportunity to use skills, work environment, etc. These factors were then presented in a comparative fashion to the respondent, asking the relative opportunity of obtaining them in the Navy versus the expectation of obtaining them in a civilian occupation. A seven point scale was used; the end points were "Markedly Better in Civilian Job" (1) and "Markedly Better in the Navy" (7), while the mid point was "Comparable" (4).

Perceived spousal attitudes toward various aspects of the respondent's Navy career were also explored. Some of the aspects were family separation, changes in geographic location, and general attitude toward Navy career.

Twenty-seven variables (several previously presented in other sections) were presented to the subjects to ascertain how they had influenced career intentions. The response scale

contained five points ranging from "very negative influence" (scored 1) to "very positive influence" (scored 5) with "has no impact/no experience with factor" (scored 3) used as the center point. Additional variables included were "sum total of Navy pay in general: (Q 101), "shipboard habitability" (Q 102), "fairness of treatment by detailers: (Q 113), "the way civilians view Navy enlisted personnel" (Q 115) and "the possibility of being assigned PCS to a ship" (Q 120). The entire questionnaire is included as Appendix A to this thesis.

The survey was approved by Commander, Naval Security Group Command and mailed to the commands listed in Appendix B in September, 1979. Of the total E-5/6 population (956), in the CTM rating, 145 were excluded because of duty outside the NSG, because they were in school, or because of insufficient addressal information. The cutoff date for receipt of returned questionnaires was established as being October 25, 1979; by that date 501 completed and acceptable questionnaires were received from 42 stations for a return rate of 62% of the distributables.

One hundred subjects were given follow-on interviews of an open-ended nature. These interviews were conducted in California (San Diego, Imperial Beach, Skaggs Island), Maine (Winter Harbor), Connecticut (New London), and Virginia (Norfolk, Northwest). Personnel represented both ships and shore stations. Excerpts from these interviews are presented in Appendix C.

D. STATISTICAL APPROACH

The stated reenlistment intentions of respondents (question 14, NSGCS), used as the dependent variable for this analysis, were measured on a seven point scale in order to classify stayers, leavers or undecideds:

14. To what degree are you now certain that you will continue an active Navy career until mandatory retirement?

1 I am completely committed to a non-Navy career as soon as possible. There is no possibility of my reenlistment.

2 I am almost certain that I will get out of the Navy as soon as possible.

3 I am very likely to get out of the Navy after completing my service obligation.

4 I am not inclined the least bit either way.

5 I am very likely to continue my Navy career as long as possible.

6 I am almost certain that I will make the Navy a career.

7 I will continue my Navy career as long as possible. There is no chance that I will voluntarily leave the Navy.

Although the analytical interest lies with the groups indicating a decision (defined as individuals choosing any of the following responses: 1,2,3 or 5,6,7), it is the undecided

population which may be the most significant to managers. The 501 cases in the survey sample were classified into three groups based on their responses to the NSGCS reenlistment intent question. Those persons responding 1,2, or 3 were classified as leavers; those responding 4 were classified as undecided; and those responding 5,6 or 7 were classified as stayers. Frequency analyses and cross-tabulations with appropriate descriptive statistics were obtained for each intent category (see Appendices D and E). These analyses were conducted in an attempt to describe the characteristics of the "typical" representative of each reenlistment intent group. For example, a previous study by Stoloff et al., (1972), reported the profile of a "typical" Navy reenlistee as follows:

..., he is relatively more satisfied with his job, supervisor, and Navy life in general, his morale is higher, he has a greater amount of Navy schooling which he uses on the job, he is married, earns more money and comes from a family having a slightly lower socio-economic status than the man who does not intend to reenlist. (Stoloff et al., pg. 56)

Perry (1977) provides a profile of a "typical" Air Force Avionics Technician intending to reenlist:

..., he is relatively more satisfied with his job, training opportunities, and personal freedom as compared with civilian employment; he is married, considers his Air Force pay and fringe benefits package to be relatively better than civilian opportunities, has fewer months of service on the job, and has a greater preference for supervising others than does an Avionics Technician who does not intend to reenlist. (Perry, pg. 29)

Variables indentified as having some relationship to re-enlistment intent were subjected to additonal data analysis techniques in an attempt to obtain a set of variables correlated with reenlistment intent. Principle components factor analysis was selected as the primary data reduction technique.⁶ (See Appendix F for a sample principle components factor analysis.) "Factor analysis is a generic name given to a class of techniques who purpose consists of data reduction and summarization" (Perry, 1977, pg. 29). the objective of such a technique is to systematically determine survey items or combinations of items that could be used to represent constructs (factor scales) related to reenlistment intent.

Next, the reliability of scores from the factor scales was computed. In general, the concept of reliability refers to how accurate, on the average, the estimate of the true score is in a population of objects to be measured.⁷ Factor scales with acceptable reliability coefficients provide scores that are likely to provide a stable ordering of the respondents on the scales. Additionally, reliable factor scales are more likely (than unreliable factor scales or scores from single questionnaire items) to provide date that will have significant correlations with reenlistment intent.

⁶For additional information, see Fruchter, 1954, Hair et al., 1979, or Nie et al., 1975.

⁷For additional information, see Hair et al., 1979, or SPSS Update, Nie et al., 1979.

Finally, a single-equation linear regression model with stated reenlistment intent as the dependent variable was used to ascertain the relationships of the constructs (factor scales) obtained from the factor analyses to the reenlistment intentions of the CTMs. Various stepwise regression procedures for groups of variables were performed as recommended by Stoloff et al., (1972), Lockman et al., (1972), and Perry (1977). With this procedure, comparison of regression results with the earlier studies, which used similar empirical strategies, was possible, and will be discussed in Chapter IV. Having determined the variables that related to individual intentions, it was felt that an attempt should be made to subdivide the sample into groups and analyze their intentions as a group, e.g., E-5 vs E-6, married vs single.

IV. RESULTS AND DISCUSSION

A. INTRODUCTION

This section contains an overview of the results of the investigator's analyses, which were directed at determining the correlates of reenlistment intent for E-5/6 CTM personnel. The demographic composition of the sample is presented, followed by the development of hypotheses. Descriptive characteristics differentiating the "typical" leaver from the stayer will be presented in terms of both demographics and attitudinal responses. Results of the factor analysis of the multiple variables, regression analysis, and tests for reliability of the factor scales constitute the statistical evaluation. A discussion of the narrative statements of reasons for leaving and responses concerning least preferred/most preferred duty stations, concludes the reporting of results. More detailed and technical presentations will be found in the Appendices.

B. DEMOGRAPHY OF NSGCS SAMPLE

Table 4.1 presents the demographic composition of the NSGCS sample (N=501). One salient facet bears highlighting: intent to reenlist was expressed by 24.2% of the sample; leavers (people who expressed an intent to leave the Navy at the end of their enlistment) comprise 64.6% of the sample.

Tables 4.2 and 4.3 represent the demography of the two intent groups, Leavers and Stayers. The mean age of Stayers

is 30 years with 70% of that group beyond 27 years of age; the mean age of Leavers is 24 with 79% younger than 26 years of age.

Of the stayers, 69.4% were E-6, while E06s constituted 34.3% of the total sample; E-5 personnel made up 77.5% of the Leavers, and 65.7% of the total sample. Time in Service (TIS) reflected the younger/older and senior/junior differences between the two reenlistment intent groups. The TIS mean for Leavers was 5.3 years, with 69% of Leavers having less than 6 years of active service. However, consistent with the findings that Stayers are older and more senior, the mean TIS for this group was 10 years.

The marital status of respondents indicates that 81.8% of the Stayers are married, while just 56.5% of the Leavers are married. Those never married make up 14% of the Stayers and 34.3% of the Leavers. For the sample as a whole, engaged and divorced personnel represented only 3.0% (N=15) and 5.4% (N=27), respectively.

Sea duty is an unknown experience to most CTM E-5/6 personnel, although with the introduction of new ships to the inventory requiring manning by NSG technicians, this will change. An astounding 78% of the E-5/6 CTMS have never been to sea (N=390). Those who do report some sea duty (15%) show their most recent experience as Temporary Additional Duty (TAD), i.e., less than 6 months, while 7% were permanently assigned to their ship.

NSGCS: DEMOGRAPHY OF TOTAL SAMPLE (N=501)

Pay Grade	<u>E-5</u>	<u>E-6</u>				
	329 (65.7)	172 (34.3)				
Age	<u>20-23</u>	<u>24-27</u>	<u>28-31</u>	<u>32-35</u>	<u>36-40</u>	
N (%)	185 (37)	170 (34)	78 (16)	48 (9)	19 (4)	
Marital Status	<u>Never Married</u>	<u>Engaged</u>	<u>Divorced</u>	<u>Married</u>		
N (%)	146 (29.1)	15 (3)	27 (5.4)	313 (62.5)		
Education (Years)	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
N (%)	1 (.2)	329 (65.7)	79 (15.8)	62 (12.4)	14 (2.8)	15 (3)
Sea Duty	<u>None</u>		Most Recent: <u>TAD</u>		<u>PCS</u>	
N (%)	390 (77.8)		76 (15.2)		35 (7)	
Time in Service (Years)	<u>2-5</u>	<u>6-9</u>	<u>10-13</u>	<u>14-17</u>	<u>18-20</u>	
N (%)	285 (77.8)	103 (21)	74 (14)	31 (7)	7 (1)	
When Eligible To Leave Navy	<u>9/79-8/80</u>	<u>9/80-8/81</u>	<u>9/81-8/82</u>	<u>Beyond 8/82</u>		
N (%)	85 (16.9)	116 (23.1)	140 (27.9)	160 (31.9)		
Career Intention Groups	<u>Leavers</u>	<u>Undecided</u>	<u>Stayers</u>			
N (%)	324 (64.6)	56 (11.2)	121 (24.2)			

Table 4.1

LEAVERS: DEMOGRAPHY OF GROUP (N=324)

Pay Grade	<u>E-5</u>	<u>E-6</u>					
N (%)	251 (77.5)	73 (22.5)					
Age	<u>20-23</u>	<u>24-27</u>	<u>28-31</u>	<u>32-35</u>	<u>36-40</u>		
N (%)	145 (45)	129 (40)	33 (10)	12 (4)	4 (1)		
Marital Status	<u>Never Married</u>	<u>Engaged</u>	<u>Divorced</u>	<u>Married</u>			
N (%)	111 (34.3)	10 (3.1)	20 (6.2)	183 (56.5)			
Education (Years)	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>18</u>
N (%)	1 (.3)	221 (68.2)	49 (15.1)	39 (12)	5 (1.5)	8 (2.5)	1 (.3)
Sea Duty	<u>None</u>		Most Recent: <u>TAD</u>		<u>PCS</u>		
N (%)	259 (79.9)		44 (13.6)		21 (6.5)		
Time in Service (Years)	<u>2-5</u>	<u>6-9</u>	<u>10-13</u>	<u>14-17</u>			
N (%)	225 (69.4)	69 (21.3)	74 (14)	20 (6.2)			
When Eligible To Leave Navy	<u>9/79-8/80</u>	<u>9/80-8/81</u>	<u>9/81-8/82</u>				
N (%)	56 (65.8)	83 (71.5)	102 (72.8)				

Table 4.2

STAYERS: DEMOGRAPHY OF GROUP (N=121)

Pay Grade	<u>E-5</u>	<u>E-6</u>			
	37 (30.6)	842 (69.4)			
Age	<u>20-23</u>	<u>24-27</u>	<u>28-31</u>	<u>32-35</u>	<u>36-40</u>
N (%)	14 (12)	23 (19)	37 (30)	33 (27)	14 (12)
Marital Status	<u>Never Married</u>	<u>Engaged</u>	<u>Divorced</u>	<u>Married</u>	
N (%)	17 (14)	2 (1.7)	3 (2.5)	99 (81.8)	
Education (Years)	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
N (%)	67 (55.4)	23 (19)	21 (17.4)	5 (4.1)	5 (4.1)
Sea Duty	<u>None</u>		Most Recent: <u>TAD</u>		<u>PCS</u>
N (%)	85 (70.2)		25 (20.7)		11 (9.1)
Time in Service (Years)	<u>2-5</u>	<u>6-9</u>	<u>10-13</u>	<u>14-17</u>	<u>18-20</u>
N (%)	22 (18)	25 (21)	47 (39)	21 (17)	6 (5)

Table 4.3

There was little difference in the proportions of stayers and leavers who had sea duty experience.

Research by Morion (1965) indicated that the reliability of stated intent for predicting actual first-term reenlistment behavior varies with time in service. Both Lockman et al. (1972) and Perry (1977) reported a decline in the average propensity to reenlist up to midway during the first term. However, in contrast to the conclusion reported by Lockman that reenlistment intent for Navy personnel in various occupational specialties was constant during the last year of the term, Perry noted a slight upward trend during the last two years before the end of active obligated service (EAOS). Since only 6% of the sample in the Perry study had more than 2 years of service, there was limited confidence in the observed trend.

Empirical evidence from the NSGCS of CTMs tends to support the trend found by Perry. Additionally, the NSGCS had a significantly larger percentage of the sample beyond the midway point (60% have greater than 4 years TIS).

The U-shaped curve in Fig. 1 was obtained by plotting the average intent to reenlist score against the years of service for the sample.⁸ Since the term of enlistment for a CTM is 6 rather than 4 years, it was noted that the decline continued through the fourth year, i.e., 2 years from EAOS, as predicted

⁸The average intent to reenlist score for a given year was calculated by averaging the responses (to the intent question) for all those respondents having that number of years of service.

by both Perry and Lockman. (Note: data are cross-sectional, and not from cohorts.)

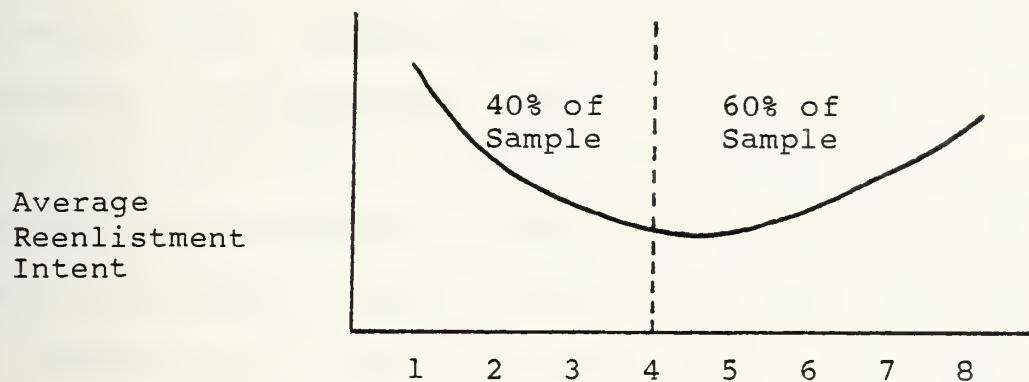


Figure 1
Reenlistment Intent by Years of Service for CTMs.

The curve in Figure 1 portrays the average intent for the entire sample. The same data plot for first-term personnel is nearly identical to the one shown in Figure 1.

Finally, a brief examination of the leaver group by years of service indicates an increase in both the number planning to leave and the percentage of those eligible to leave. The proportions of those eligible to leave who expressed an intent to leave for 1979-80, 1980-81 and 1981-82 are, respectively: 65.8%, 71.5% and 72.8%. Clearly, if intent may be taken as a valid predictor of the reenlistment decision, and if stated intent at the time the questionnaire was completed approximates actual decisions, the CTM reenlistment rate will become unacceptable, i.e., NSG may be unable to meet operational requirements.

C. RELATIONSHIPS OF VARIABLES WITH INTENT

The survey questionnaire described in the preceding chapter of this thesis included attitudinal questions concerning job satisfaction, leadership/supervision, recognition, self-perceptions, socio-economic status, Navy life in general, economic expectations, training received/training value, civilian job alternatives, spousal attitudes and reasons for leaving or staying. While a primary objective is to determine the correlation of each of these items with reenlistment intent, they may also be of considerable import in determining (for this sample at least):

- (1) What variables correlate with job satisfaction or favorable attitude toward Navy life in general?
- (2) What importance is placed on pecuniary incentives?
- (3) How do those who have been assigned to a ship perceive their living conditions/working conditions aboard ship and how does this affect morale and job satisfaction?
- (4) What variables correlate positively/negatively with spousal attitude and what is the effect of that attitude on the service member's decision making?
- (5) How do the CTMs feel they are perceived by the civilian community and what would their salary expectations be in the civilian marketplace?

In attempting to answer these questions (as well as other related issues), approximately 100 interrelated attitude items and questions were included in the survey questionnaire. The

questionnaire grouped the variables into different sections: Training Received, Sea Duty (Deployed), Sea Duty (Not Deployed), Shore Duty, and Comparison of Navy vs Expected Civilian Career. Statistical analysis of the questionnaire items was expected to reduce these variables to basic factors or dimensions. These factors were hypothesized to be Intrinsic, Extrinsic and Social. The Social factor, while general in nature, was postulated to include the familial concerns of the CTM: family stability and social status. in the following pages, results will be presented demonstrating some basic differences between the Leaver and Stayer.

While expressions of reenlistment intent separated the sample into three basic groups (Leavers, Stayers and Undecideds), the question "Who are the Leavers/Stayers?" must be answered. Rating managers at Navy Manpower and Personnel Command (NMPC) must track the manning levels by length-of-Service (LOS) and by paygrades in order to insure needed force levels and prevent imbalances from occurring at various pay grade levels. Shortages at early career reenlistment points not only impinge on the numbers of personnel available for assignment at that level, but influence future manning shortages at more senior pay grade levels as well. Therefore, first term reenlistment figures are an important concern.

By cross-tabulating Reenlistment Intent (Q 14) with years of Active Service (Q 8), first and second (and greater) reenlistment rates could be closely approximated. If the time which an individual had remaining until his EAOS added to his

TIS equaled 6 years, he was considered a first termer. No extensions or reenlistments were in effect which could give him an EAOS beyond his 6 year obligation. The reenlistment intent response for these 211 first termers was:

	<u>LEAVE</u>	<u>UNDECIDED</u>	<u>STAY</u>
N (%)	169 (80.1)	29 (13.7)	13 (6.2)

A serious question for NSG retention managers is "Can you live with a first-term reenlistment rate likely to be between 6.2 - 19.9%? (19.9% equals sum of 6.2% + 13.7%, if all undecideds would be assumed to reenlist.)

When reenlistment intent and TIS were cross-referenced with marital status (Q 11), an interesting comparison resulted.

1st TERM			
	<u>SINGLE</u>	<u>MARRIED</u>	
N (%) Leavers	96 (80)	109 (79)	
Undecideds	15 (12)	18 (12)	
Stayers	9 (8)	13 (9)	
	<hr/>	<hr/>	
	(100%)	(100%)	

Table 4.4

During the first term, the proportions of each intent group are the same for married and single. It is only in the

second reenlistment (after 6 years) that a marked difference appears in the percentage of each marital status group intending to leave or stay. Of all who indicated an intent to reenlist, it may be noted that 82% (99/121) are married.

2nd TERM and BEYOND

	<u>SINGLE</u>	<u>MARRIED</u>
N (%)	Leavers	15 (58)
	Undecideds	3 (12)
	Stayers	8 (30)
		<hr/>
	(100%)	(100%)

Table 4.5

If the first important point is the number of those leaving/staying, and the second identifies who is in each group, then the third must seek to explain or elucidate the variables relating to reenlistment intent.

At what point in an E-5/6 CTM's career is his decision made? Interestingly, a very small (5%) percentage of the entire sample said they joined the Navy with their plans firmly set (Q 15). No significant percentage of the sample reported making a decision until the first or subsequent shore tours; however, during those two events 55% of the sample makes its

decision. Of those who stated that they had made a decision during the first shore tour, 77% decide to leave (%=103/134).

Remembering that sea duty has been experienced by few of the sample, it is interesting to note that the possibility of being assigned PCS to a ship (Q 120) had the most negative stated effect on career intentions. The responses of both Leavers and Stayers to questions asking the degree of satisfaction experienced with numerous factors while deployed/not deployed, are remarkable indeed (Q 24-51). Questions about challenge, responsibility, work pressure, supervision quality, adventure, work relationships and morale evoked the same response in degree of satisfaction, i.e., either neutral or slightly satisfied. One factor stood out, however, as giving both groups great dissatisfaction: Separation from Family/Friends (Q 25). Also, the Leavers were quite dissatisfied with their deployed working environment, a situation which the stayers expressed as not affecting them in any way (Q 27). Both Leavers and Stayers felt that family stability was important. In Section III of the NSGCS the respondent was asked to indicate the relative expectation of opportunity, e.g., job security, advancement, etc., in the navy versus in a civilian occupation. Family Stability (Q 80) was regarded by both Leavers and Stayers as being more obtainable in the civilian sector than any of the other job-related or social variables mentioned. Both groups, when asked to evaluate their spouses' attitudes toward various aspects of the CTMs' Navy careers (Q

90-96), responded that family separation (Q 91) had the most negatively perceived effect on the spouse.

Less negative, but still expressed as having a deleterious influence on the reenlistment intent of service members, were other related social variables. These variables are general in nature and may represent something slightly different to each respondent; among them are Impact of Navy Career on Home Life (Q 99), Navy Life in General (Q 100), and The Way Civilians View Navy Enlisted Personnel (Q 115).

The second major factor hypothesized as affecting reenlistment intent was a grouping of "intrinsic" job satisfaction variables. Included among these variables are achievement, recognition, personal growth and satisfaction with the work itself. The affect of these variables was examined throughout the NSGCS: sea duty (deployed/not deployed), shore duty, comparison with expectations in a civilian job, and their affects on the subject's Navy career intentions.

Of the Leavers who had experienced sea duty, 23% expressed dissatisfaction with the amount of opportunity for challenge (Q 24), while only 2% of the Stayers responded similarly. Sixty six percent of the Leavers felt that interesting and challenging work was more likely to be found in a civilian job rather than in the navy (Q 73), yet only 25% of the Stayers agreed with them. Job factors such as responsibility (Q 78) appeared to divide the two intent groups even more sharply. Almost half of the Stayers (47%) believed that responsibility

was more obtainable in the Navy than in a civilian occupation, while only 10% of the Leavers agreed.

Recognition and status (Q 85) were overwhelmingly perceived (79%) as being more obtainable in a civilian occupation than in the Navy by those stating an intent not to reenlist. Less than half of the CTMs intending to stay saw a greater opportunity for recognition and status in civilian jobs. Generally, in each job setting presented in the NSGCS, satisfaction with intrinsic variables was high to very high for Stayers while Leavers' attitudes ranged from neutral to slightly dissatisfied.

Finally, the impact of extrinsic variables, e.g., pay and benefits, was investigated. CTMs receive extensive electronics training and most were keenly aware of pay scales for comparable jobs in the civilian sector. This perception of civilian pay scales (and CTM beliefs about the marketability of their skills) was evidenced in the answers obtained to questions 86-89:

"If you separated from the Navy now, how would you expect your civilian annual pay and benefits to compare with what would have been your navy pay and benefits at each of the various points in time?

In one year
 In three years

In five years
 In ten years

1	2	3	4	5	6	7	8
Do	Civ	Civ	Civ	Civ	Civ	Civ	Civ
Not	Pay	Pay	Pay	Pay	Pay	Pay	Pay
Know	\$10K	\$5K	Navy	\$5K	\$10K	\$15K	\$20K
	Less	Less	Same	More	More	More	More"

Subjects were given this eight point scale from which to choose responses; these responses included pay increments favorable to both Navy employment and civilian employment as well as categories for "comparable" and "do not know". Leavers and Stayers did not respond differently to a statistically significant extent to this question. For the group as a whole, civilian pay was perceived to be greater at each decision point in the following mean dollar amounts:

1 year: \$5K	5 years: \$10-15K
3 years: \$10K	10 years: \$15-20K

Subjects were also asked if the availability of free medical and dental care offset the difference between military and civilian pay (Q 137). Again, no distinction could be drawn between the Leavers and Stayers on the basis of their responses. Only 36% of the entire sample believe that those benefits acted to offset the differences in pay.

The effect of potential bonuses was examined in questions 16 and 17. First the subjects were asked how the awarding of what they perceived to be a substantial career bonuses to remain on active duty beyond their EAOS would affect their career intention. Almost 50% of the Leaver group indicated that they would remain on active duty for a bonus, while 77% of the Undecided group said they would stay. While this type of bonus award is outside the span of control of the NSG, its possible impact should be considered. The second type of bonus investigated was a selective bonus within the control of NSG,

and would be awarded to those on sea duty or isolated duty. CTMs were queried on how this policy would affect the entire M-branch community. The results were overwhelmingly (83%) negative. Stayers and Leavers responded in similar ways.

D. THE REGRESSION MODEL

Simple correlations⁹ and cross tabulations for all variables were analyzed, and revealed that there were possible redundancies in the data which could cause collinearity problems in the planned regression model. To avoid this difficulty, principal components factor analysis was used to form constructs from individual items, or to select a single item to represent a group of interdependent variables. The calculated components represented linearly independent constructs not directly observed from the raw data, but which were intuitively appealing indicators of reenlistment intentions. The factor analysis produced 16 factors meeting the inclusion criteria.¹⁰ Each scale factor was checked for logical groupings of variables and for the degree to which it could be interpreted. Those factors which passed this scrutiny were then evaluated to assess the reliability of the sum across variables constituting the factor. Finally, factors yielding factor scores whose computed reliability coefficients¹¹ exceeded

⁹ Parametric and non-parametric correlations were comparable and it was determined that an interval level of measurement assumption was valid.

¹⁰ Factor eigenvalue=1.0 and approximately 80% of cumulative variance explained.

a previously determined threshold of statistical significance were considered viable candidates for multiple regression analysis.

The factors were then subjected to a step-wise linear regression in which the factors were used to estimate a propensity-to-reenlist equation for the CTM population. Five key explanatory factors were found to be consistently and significantly related to CTM reenlistment intentions, the dependent variable. A complete description of the factors and the results of the factor analysis is given in Appendix G. The results of the multiple regression analysis are shown in Appendix H.

The factor accounting for most of the explained variance in the CTM reenlistment responses was the intrinsic job satisfaction factor (INTJOB). This factor includes survey items related to challenge, freedom, initiative and responsibility of the job relative to the civilian community, as perceived by the respondent. The next most important factor tapped the impact of military life on family or social status (SOCIAL). Other factors were the CTMs' perceptions of the military fringe benefit package (EXTJOB), and the work environment (WRKASG) to include training opportunities. The remaining factor assessed CTM preferences for a technical versus a managerial career path.

¹¹Cronbach's alpha and a standardized item alpha were computed; scales were composed of these variables with factor coefficients greater than 0.60.

E. RESULTS OF INTERVIEWS AND OPEN-ENDED QUESTIONS

Subjects were given an opportunity (Q 146-151) to list what they felt to be the three most important considerations contributing to an M brancher's decision to continue/not continue his Navy career until retirement. Responses in the "not continue" block were examined only for those subjects identified as Leaver (Q 14), while those in the "continue" block were examined only for CTMs expressing intent to reenlist (Q 14). All responses were coded and placed in descriptive categories. The results are listed in Table 4.6 (multiple answers allowed for each respondent):

REASONS TO CONTINUE NAVY CAREER UNTIL RETIREMENT

<u>REASON</u>	<u>STAYERS</u>	
	<u>N</u>	<u>%</u>
<u>Extrinsic</u>		
a. Retirement benefits, pay, medical/dental educational	97	30
b. Job security	36	11
	<hr/>	<hr/>
	133	41
<u>Intrinsic</u>		
a. Job satisfaction	73	22.5
b. Training	40	12.3
c. Co-workers	11	3.7
	<hr/>	<hr/>
	124	38.5
<u>Social</u>		
a. Good duty stations/travel	52	16
b. Service/patriotism/image	15	3.8
	<hr/>	<hr/>
	67	19.8

Table 4.6

While the Stayers reported considerations in a positive light, the Leavers listed the same basic considerations worded negatively:

REASONS NOT TO CONTINUE NAVY CAREER UNTIL RETIREMENT

<u>REASON</u>	<u>LEAVERS</u>	
	<u>N</u>	<u>%</u>
<u>Extrinsic</u>		
a. Low pay, higher civilian pay	294	31.2
b. Available civilian employment	61	6.5
c. Poor educational benefits	5	.5
	<hr/>	<hr/>
	360	38.2
<u>Intrinsic</u>		
a. Job satisfaction (lack of)	153	16.2
b. Lack of fairness in work assignments and treatment	88	9.3
c. Poor supervision/management	69	7.3
d. Lack of training to do the required job	14	1.5
	<hr/>	<hr/>
	324	34.3
<u>Social</u>		
a. Living conditions (going to sea, PCS moves, family separation)	105	12.1
b. Military life (lack of freedom, image)	92	9.8
c. Duty station location	34	3.6
d. Unmet expectations	24	2.5
	<hr/>	<hr/>
	150	28.0

Table 4.7

Among the extrinsic factors mentioned by subjects in the Leaver group, 355 (37.7%) respondents mentioned higher civilian pay and available civilian employment. As expected, 60% of the sample (if they were to leave the Navy now) would

attempt to enter the electronics/electronics maintenance field in the civilian economy (Q 72), reflecting both knowledge of alternative employment and continued use of training received in the military. This is slightly less than, but consistent with, the findings of Norrbom's study (1976) of former military personnel entering the civilian electronics industry. In that study, over 70% of those who had received electronics training in the military went to postservice jobs in civilian electronics. Norrbom also concluded that one year of military vocational training contributes 11.8% to postservice wages of those who enter civilian occupation comparable to their military specialties.

Subjects were asked to list the three most preferred duty stations to which they might be assigned (Q 140-145). Consistent with responses in previous sections concerning family separation, the least preferred duty stations were those involving sea duty and isolated duty. Again, Leaver and Stayer could not be distinguished from the responses, and unanimity was the key through the first six selections on both least preferred and most preferred duty locations. The locations mentioned most often were (in order):

LEAST PREFERRED

Diego Garcia
(considered worst)
Sea Duty
Alaska
Iceland
Guam

MOST PREFERRED

Edzell, Scotland
(considered best)
Rota, Spain
Hawaii
Pensacola, Florida
Skaggs Island, California

Table 4.8

The overview of demographics and correlations of variables with intent produced comparisons of Stayers and Leavers. By understanding the variables which lead a CTM to commit himself as a Stayer, retention managers should be better able to deal with the problem of retaining personnel. In this light, a characterization of a typical Stayer should be of major interest to the retention manager. As outlined earlier, two previous studies (Stoloff et al., 1972; Perry, 1977) reported profiles of "typical" Navy and Air Force Avionics Technician reenlistees. From the data gathered in this theses on CTMs, the following picture of a CTM E-5/6 who intends to reenlist is presented:

He is an E-6, 30 years old, and has 10 years of service. He has likely not been to sea and considers the prospect of being assigned PCS to a ship as being very negative. He did not enlist to get training for a civilian job. He is married, and his spouse is positive about his Navy career. He is more satisfied with the opportunity to grow professionally, use of his own initiative, and the change to have interesting duty than the CTM who does not intent to reenlist. In comparing his job with a similar job in the civilian sector, he perceives that the Navy offers him more challenging work, more freedom to plan his own work, more use of his own initiative, and more responsibility than does a CTM not planning to reenlist. His morale is significantly higher than the morale of those who do not intend to reenlist.

This concludes the discussion of results. The following section presents conclusions based on the findings and analyses of this study as well as recommendations for courses of action to be pursued.

V. CONCLUSIONS AND RECOMMENDATIONS

A. INTRODUCTION

The results of the empirical analysis coincide with the general concepts of previous studies of reenlistment intentions. The findings of the interviews and open-ended survey questions tended to converge with and reinforce the interpretation of the survey results. The research suggests that reenlistment intentions might be improved if changes were made which would promote satisfaction with several key factors, e.g., the value of the job, satisfaction with and life in the Navy in general.

The thrust of this research was to identify factors which influence the intent to reenlist for all E-5 and E-6 personnel in the critical CTM rating, regardless of term of enlistment. The analysis of the survey showed that the first-term reenlistment rate (based on stated intent of respondents) was the lowest of any group (second-term or above). It was also noted that the stated intent to reenlist was different for groups with varying lengths of TIS with the least likely propensity to reenlist occurring at the four year mark.

B. CONCLUSIONS

The review of the literature of previous empirical studies provided verification for the statistical techniques employed, as well as a basis for comparison of results. Of primary interest was the consensus that the stated intent to reenlist

is a valid substitute for the actual reenlistment decision. Based on the data from longitudinal inquiries (Lockman et al., 1972; Brunner, 1971), it was concluded that stated intent was, indeed, a valid proxy for actual reenlistment behavior.

The results of the analysis showed the correlation of reenlistment intent with five key explanatory factors. The most important of these was the perception of satisfaction with the Navy job as compared to civilian opportunities. This factor tapped the intrinsic aspects of the job, and the associated work experiences, i.e. job content as described by Perry. The positive correlation between the intrinsic factor and intent showed the importance of the relationship between liking the job itself and how effective management was in creating a good work environment.

The social/family composite was the next most important influence on the CTM's reenlistment intent. It dealt primarily with the feelings of the respondent and the perceived feelings of the spouse towards the Navy lifestyle. There was a significant impact on this factor by the spouse's attitude, as perceived by the respondent, toward the Navy, and the impact of a Navy career on home life, both of which support the conclusion that consideration must be given to relationships which develop outside the work environment.

The appearance of the external job factor as a key explanatory factor in determining reenlistment intent supported the traditional theory of economic influence. However, it appeared that the effects of a career bonus or SRB along with

job security, as opposed to direct wages, were the prime drivers of intent. Thus, appropriate monetary incentives, if available, should be effective in increasing reenlistments.

A second dimension of job satisfaction (work assignment) appeared as the next factor. It includes the respondent's perceptions concerning training received and NEC to which assigned, both of which are strongly affected by organizational policy. Additional aspects of this factor included perceived fairness of detailers, and availability of desired billets and stations.

The technician's desire not to supervise others (assuming equal pay for nonsupervisors) increased significantly his likelihood of being undecided, but not favorable, toward reenlistment. This result, which duplicates the findings of Perry concerning Air Force Avionics Technicians, gives tentative support to the notion that by requiring assumption of supervisorial responsibility for career advancement, skilled technicians are discouraged from reenlisting. In a phrase, they apparently want to remain technicians; not become supervisors and paper-pushers as they attain higher paygrades.

C. RECOMMENDATIONS

Recommended courses of action which may be considered fall into two categories: those which have as their goal the retention of navy personnel through intrinsic, extrinsic or social policy actions, and those which forsake the ideal of a fully manned military maintenance force for less desirable, but possibly realizable, alternatives.

As demonstrated, CTM E-5/6 personnel take many variables into account when making a career intent decision. If the "push-pull" syndrome is indeed active in this situation (wherein one or more factors internal to the organizational setting or family setting combine to "push" the service member to a point of dissatisfaction and decision, while one or more external factors serve to "pull" him out), then many variables must be addressed by the highest levels of command for improvements in reenlistment figures to be realized.

The first shore assignment was identified as a critical point for making a career intent decision (see page 36). For many respondents, unmet expectations were mentioned in both the interviews and narrative comments of the NSGCS as a source of disappointment and misunderstanding. If incorrect perceptions or misleading information are present in the CTM environment during the recruiting and "A" school training phases prior to the first shore tour, a breeding ground for dissatisfaction and negative attitudes will be perpetuated. Considering the almost 80% of all CTMs surveyed who had never experienced sea duty, the highly negative attitude toward sea duty may be accounted for, in part, by this problem.

Recommendation 1: Efforts must be made to present the service member with more accurate information about the organization and his part in it; the possibility of sea duty and those positive and negative aspects which may be encountered; the types of training available and career paths/rotations policies resulting from that training; housing/berthing situations which may be encountered; and a briefing of the benefits available to the member and how in realistic terms to take full advantage of them. These

efforts should be included in prereenlistment recruiting discussions.

For married personnel, the separation while deployed is most negative. Other situations mentioned as influencing spousal attitude are treatment by the command (especially during deployment) and treatment by medical facilities. For personnel who decide to reenlist, their spouses' attitudes were perceived as being positive.

Recommendation 2: More attention must be paid to the unique problems of married and single personnel. To perform this function, recommend establishment of a committee at HQ, NSG to review these problems, and recommend courses of action to station commanding officers. This is not to give one preferential treatment over the other, as antagonism over unfair policies differentiating married and single personnel already exists; however, the Command must be aware of special situations which can be made into positive experiences by understanding and timely positive action on behalf of service families.

The quality of supervision, leadership and management was frequently mentioned in the NSGCS narrative comments (see Appendix C) as being less than effective. Situations exist wherein no leadership is encouraged, since all members of a watch are E-5 or E-6 and the mission is to "keep the equipment up". The perception persists that CTMs are technicians first and military personnel second; with few or no opportunities to practice leadership/management skills and advancement exceptionally rapid, CTMs arrive at E-5/6 with little or no understanding of good or bad supervision, only the way it has always been done.

Recommendation 3: Pay considerably more attention to this critical area. Petty officers need the assistance of more senior petty officers, Chief Petty Officers and Officers in developing correct leadership and management skills. Short courses from LMET or HRM are good places to begin but much more training must be given to improve the situation which compounds itself as these same petty officers are ultimately selected for Chief, Warrant, or Limited Duty Officer, to then return to maintenance divisions in management jobs. Again, with the first shore tour so critical to a young CTM in terms of career decision, supervision must be improved or disillusionment and dissatisfaction will remain.

While the quality of supervision/management was perceived to be less than adequate (see Appendix C), it is ironic to note that the expressed desire not to manage upon reaching E-7 was quite strong. Many petty officers enjoy being technicians and would prefer to remain technicians instead of assuming administrative functions upon reaching a higher pay grade at E-7. The perception of most respondents is that E-7s are negatively viewed by seniors for working on equipment, and receive no further technical training even though they may be needed and highly capable.

Recommendation 4: Construct an alternate career path for E-7-9 personnel allowing the option to choose managerial or technical paths. By utilizing a Chief Petty Officer as a "Super Technician", his longevity in the navy may be prolonged as well as his productivity. This new designation may attack the perception of lack of control over one's own fate vis a vis job selection.

Training dollars are spent in large amounts on personnel who fulfill their 6 YO and then separate. Little return on

investment is realized by the trainer and employer, in this case the Navy or NSG.

Recommendation 5: Construct a new 2 YO - 4 YO - 6 YO enlistment option with various training, advancement and assignment incentives associated with each. The 2 YO would not receive "A" school benefit; investment would be minimal. This individual could be considered to be the curious person or the one looking for a temporary change of situation. Losses in this area would not be significant; however, reenlistment for training would be an extensive payback obligation. The 2 YO is the Apprentice; he would work with experienced personnel for on-the-job training (OJT) and perform the simplest and most redundant tasks which now rob the more experienced technicians of fuller satisfaction. The 4 YO is the Journeyman. After receiving a shorter formalized training than that currently given, he would be proficient enough to perform most basic work. Extensions would reward him with specialized schools or desired billets. The 6 YO has chosen the longest obligation and would be the recipient of the most training and different job experiences possible. He has chosen the path which will lead him to the next level, Master, in the most direct fashion. The Master would also include "Super Technicians" who serve as technicians, advisors to journeymen and teachers to apprentices. This 2 YO - 4 YO - 6 YO option might serve to minimize wasted training investment, improve supervision and leadership by opening a more pyramidal structure, and increase career incentive for junior and senior personnel.

Bonuses were observed to have a positive effect on stated reenlistment intentions for both the Undecided and Leaver groups.

Recommendation 6: Additional study should be made on the effect of bonus policies and the amounts and frequency necessary to improve the turnover rate. The study might also examine the effect of bonuses on behavior, self-perception and military ideals. These areas are of concern and if bonus awarding is the only incentive which improves incentive rates, its effect on the organization must be understood.

Assignment to specific duty stations is difficult and often impossible because of various constrictions. The perception of arbitrary or unfair assignment policies can have a debilitating affect on morale and possible career intent.

Recommendation 7: Consideration should be given to adding a new section to the "dream sheet" (duty assignment preference card) which would list not only three most desired stations of the individual, but also the three least desired. In the event the detailer could not assign an individual to one of his three most preferred stations, he would attempt to not negatively influence him by not assigning him to a least preferred station.

An unprecedeted wealth of information on the CTM rating now exists as a result of the data base built from the NSGCS. The data can be better used with more extensive probing over time. Problems of specific groups of interest, e.g., first terms, can be investigated further.

Recommendation 8: Continued use of the NSGCS data in existence to prove and identify problem areas for NSG managers. Variables which were general in nature, e.g., general attitude toward a Navy career, should be analyzed further to identify their component parts. Periodically administer a brief version of the NSGCS at field stations in order to update the data base for comparison with current data, evaluate new situations and provide feedback to personnel in the field. Compare stated intent by using social security numbers (SSNs) for tracking, with the actual reenlistment behavior of CTMs through SSN checks at Headquarters in order to check the predictive ability of the NSGCS.

Two other alternatives beyond the scope of this investigation are deemed worthy of further scrutiny.

Recommendation 9: Modularization/simplification of equipments.

Recommendation 10: Selective civilianization of CTM billets.

A major problem to be faced by NSG decision-makers is that they are subject to competition with the open labor market for both recruits and their present manpower resources (CTMs on active duty approaching a career decision point). Retention managers are presented with the dilemma of the expediency of the "quick fix" path by offering extrinsic incentives only, while expecting to maintain traditional military standards and attitudes toward military service. As a final caution, the process of maintaining manning levels is not one-dimensional. Each policy action to repair imbalances at various pay grades must take into account its affect on other levels, grades and manpower phenomena (i.e., requirements, recruiting, attrition, reenlistment/retention, and retirement).

APPENDIX A

NAVAL SECURITY GROUP CAREER SURVEY CT "M" BRANCH FORM

Background

The current low rate of CTM retention threatens the operational readiness of the Naval Security Group. This survey is being conducted to determine the reasons for this low retention rate. This questionnaire is being distributed to a sample of "M" branch CT's as part of a study being done on the problem by students at the Naval Postgraduate School and sponsored by COMNAVSECGRU.

Purpose

The results of this study will be carefully analyzed and will be reported in the form of aggregate statistics and recommendations to COMNAVSECGRU for possible implementation. The intent is to make all levels of command aware of the problems faced by "M" branch CT's, to take measures to improve problem areas, and to reverse low reenlistment rates if at all possible.

Your frank, honest answers on the questionnaire are urged. The information you give will be aggregated with that of other respondents and the provisions of the Privacy Act will be strictly enforced. Under no circumstances will your individual responses be provided to anyone in your organization.

GENERAL INSTRUCTIONS

1. Use pencil, not pen or ballpoint.
2. Erase cleanly any answer you wish to change.
3. When you have completed the questionnaire, please use the enclosed envelope to return the questionnaire to the Naval Postgraduate School.
4. There are three types of questions; the first asks for specific information:
 - A. What is your age? _____ Fill in the blank with the requested information.

The second type of question will present several possible numbered responses and ask you to fill in the space next to the question with the number corresponding to the response you have chosen. For example:

____ B. What is your primary assignment?
(1) supervisor (2) technician (3) student

If you are a student, you should fill in the space next to question B with the number 3. Example: 3 B. What is your primary assignment?

The third type of question asks for your degree of certainty or satisfaction. A scale with descriptive points marked by a number will be presented; you are to place the number of the point on the scale most closely corresponding to your belief or degree of satisfaction/certainty in the space next to the statement.

For example:

1	2	3
Disagree	Neutral	Agree

_____ C. Good liberty ports are important to me when deployed.

If you disagree with that statement, place the numeral 1 in the space before question C.

SECTION I

In this section we ask a number of general questions about your background. This information will allow statistical comparisons of responses among those sampled within the organization. Some of the questions may appear personal in nature, however they are necessary to obtain a full and accurate picture of the factors affecting career motivation and development. If any question appears unreasonably personal, please omit it and continue with the questionnaire.

We appreciate your help in providing this important information.

1. What is your SSN?

2. What is your current duty station or ship and homeport?

3. What was your previous duty station or ship and homeport?

4. What is your pay grade?

5. How many months in grade do you have?

6. What is your age?

7. What state is your home of record?

8. How many years active service do you have?

9. When will you be eligible to leave the Navy?
month _____ year _____
10. What is your educational level? (indicate highest year completed)

11. What is your marital status? (enter appropriate number in the space)
(1) engaged (2) never married
(3) no longer married (4) married

12. How many children live with you in your home?

13. What are your primary/secondary NEC's?
_____ / _____

SECTION II

Fill in the blanks with the number opposite the statement with which you most closely agree.

— 14. To what degree are you now certain that you will continue an active Navy career until mandatory retirement?

- 1 I am completely committed to a non-Navy career as soon as possible. There is no possibility of my reenlistment.
- 2 I am almost certain that I will get out of the Navy as soon as possible.
- 3 I am very likely to get out of the Navy after completing my service obligation.
- 4 I am not inclined the least bit either way.
- 5 I am very likely to continue my Navy career as long as possible.
- 6 I am almost certain that I will make the Navy a career.
- 7 I will continue my Navy career as long as possible. There is no chance that I will voluntarily leave the Navy.

— 15. If you have made a career decision either to remain in the Navy or to separate, when did you make this decision?

- (1) N/A, have not made this decision.
- (2) Before entering the Navy.
- (3) During recruit training.
- (4) During "A" school.
- (5) During my first shore tour.
- (6) During my first sea tour.
- (7) During a subsequent shore tour.
- (8) During a subsequent sea tour.
- (9) Other _____

— 16. If the Navy offered what you considered to be a substantial career bonus to remain on active duty beyond the expiration of your obligated service, how would it affect your career intentions?

- (1) No effect; I plan to stay.
- (2) No effect; I plan to get out.
- (3) I am undecided, but a bonus would have no effect.
- (4) I do not know.
- (5) I am undecided, but a bonus would have a positive effect.
- (6) I would stay in for a bonus.

— 17. If, for budgetary limits, a career bonus were offered to only those M branchers on sea duty or isolated duty, how do you feel this would affect the M branch community?

- (1) Very negative effect
- (2) Negative effect
- (3) No effect.
- (4) Positive effect.
- (5) Very positive effect
- (6) Do not know.

— 18. If you were allowed the option to continue your career through E-9 as an equipment technician rather than as a manager, how would this affect your career intentions?

(1) Very negative effect.	(4) Positive effect.
(2) Negative effect.	(5) Very positive effect.
(3) No effect.	(6) Do not know.

The following questions (19-51) apply only to your most recent sea duty (PCS/TAD) as in M brancher. If you have had no sea duty as an M brancher skip to question 52.

— 19. Which type of sea duty do/did you have most recently?

(1) TAD	(2) PCS
---------	---------

— 20. Is your most recent sea duty:

(1) Your present assignment
(2) Your immediately previous assignment
(3) An earlier assignment

21. How long have you served/did you serve on your most recent sea tour?

_____ years and _____ months

22. While deployed on your most recent sea tour, approximately how many hours did/do you work during an average seven day week?

_____ hours (If you have not deployed skip to question 38)

23. While deployed approximately what percent of the total average work hours you reported in question 22 did/do you actually spend on equipment maintenance?

_____ %

Using the scale below, please indicate how satisfied you were with these factors while deployed on your most recent sea tour. Place the number from the scale most closely corresponding to your level of satisfaction in the space next to the factor.

1	2	3	4	5
Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied

— 24. Amount of opportunity for challenge.
— 25. Separation from family/friends.
— 26. Amount of opportunity to use skills.
— 27. Working environment.
— 28. Hours of work required.
— 29. Work pressure.
— 30. Amount of opportunity for interesting duties.
— 31. Amount of opportunity to plan and schedule own work activities.

— 32. Quality of supervision received.
— 33. "Adventure"
— 34. Opportunity to grow professionally.
— 35. Attractive liberty ports.
— 36. Work relationships with co-workers/supervisors.
— 37. Morale.

Using the scale below, please indicate how satisfied you were with these factors when not deployed on your most recent sea tour. Place the number on the scale most closely corresponding to your level of satisfaction in the space next to the factor.

1	2	3	4	5
I	I	I	I	I
Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied

- ____ 38. Amount of opportunity for challenge.
- ____ 39. Separation from family/friends.
- ____ 40. Amount of opportunity to use skills.
- ____ 41. Working environment.
- ____ 42. Hours of work required.
- ____ 43. Work pressure.
- ____ 44. Amount of opportunity for interesting duties.
- ____ 45. Amount of opportunity to plan and schedule own work activities.
- ____ 46. Quality of supervision received.
- ____ 47. "Adventure"
- ____ 48. Opportunity to grow professionally.
- ____ 49. Attractive liberty ports.
- ____ 50. Work relationships with co-workers/supervisors.
- ____ 51. Morale.

The following questions (52-71) apply only to your most recent shore tour. If you have had no shore tour experience, please skip to question 72.

____ 52. Is your most recent shore tour:

- (1) Your present assignment.
- (2) Your immediately previous assignment.
- (3) An earlier assignment.

53. How long have you served on your most recent shore tour?

_____ years and _____ months

54. On the average, approximately how many hours per week did/do you work on this shore tour?

_____ hours

55. During your most recent shore tour, approximately what percent of the total work hours you reported in question 54 did/do you actually spend on equipment maintenance?

_____ %

____ 56. What is/was your primary assignment?

- (1) Equipment maintenance within your NEC.
- (2) Equipment maintenance outside your NEC.
- (3) Supervisory and maintenance work.
- (4) Supervisor.
- (5) Special services.
- (6) Master-At-Arms force.
- (7) Student.
- (8) Other _____

Using the scale below, please indicate how satisfied you were/are with these factors on our most recent shore tour. Place the number from the scale most closely corresponding to your level of satisfaction in the space next to the factor.

	2 Dissatisfied	3 Neutral	4 Satisfied	5 Very Satisfied
Very Dissatisfied	I	I	I	I

— 57. Amount of opportunity for challenge.	— 66. "Adventure"
— 58. Separation from family/friends.	— 67. Opportunity to grow professionally.
— 59. Amount of opportunity to use skills.	— 68. Attractive liberty ports.
— 60. Working environment.	— 69. Work relationships with co-workers/supervisors.
— 61. Hours of work required.	— 70. Morale.
— 62. Work pressure.	— 71. Location of duty station.
— 63. Amount of opportunity for interesting duties.	
— 64. Amount of opportunity to plan and schedule own work activities.	
— 65. Quality of supervision received.	

SECTION III

NAVY VS. CIVILIAN CAREER

— 72. If you were to leave the Navy now, which of the following civilian occupations would you most likely try to enter?

(1) Do not plan to leave.	(6) Electronics.
(2) Self-employment.	(7) Electronics maintenance.
(3) Sales.	(8) Student.
(4) Management.	(9) Do not know.
(5) General maintenance.	(10) Other _____

Please indicate the relative opportunity of obtaining the following factors in the Navy versus your expectations of obtaining them in a civilian occupation.

	1 Markedly Better In Civ	2 Better In Civ	3 Somewhat Better In Civ	4 Comparable	5 Somewhat Better In Navy	6 Better In Navy	7 Markedly Better In Navy
— 73. Interesting and challenging work.	— 80. Family stability.						
— 74. Ability to plan own work schedule.	— 81. Desirable places to live.						
— 75. Reasonable hours of work required.	— 82. Desirable co-workers.						
— 76. Freedom from work pressure.	— 83. Recognition/status.						
— 77. Use of your own initiative.	— 84. Advancement.						
— 78. Responsibility.	— 85. Quality health care.						
— 79. Job security.							

If you separated from the Navy now, how would you expect your civilian annual pay and benefits to compare with what would have been your Navy pay and benefits at each of the various points in time?

1	2	3	4	5	6	7	8
I	I	I	I	I	I	I	I
Do Not Know	Civ Pay Less	Civ Pay Less	Civ Pay Same	Civ Pay More	Civ Pay More	Civ Pay More	Civ Pay More
	\$10 K	\$5 K	Navy Pay	\$5 K	\$10 K	\$15 K	\$20 K+

— 86. In one year.

— 88. In five years.

— 87. In three years.

— 89. In ten years.

Using the scale below, please indicate how your spouse evaluates the following aspects of your Navy career. If you have no spouse, skip to question 99.

1	2	3	4	5	6	7
I	I	I	I	I	I	I
Very Negative	Negative	Somewhat Negative	Neutral or Do Not Know	Somewhat Positive	Positive	Very Positive

— 90. Changes in geographic location.

— 94. Inability to discuss your job.

— 91. Family separation.

— 95. Effects on dependents.

— 92. Health care benefits.

— 96. General attitude toward

— 93. Commissary and exchange benefits.

your Navy career.

— 97. How is your spouse employed?

(1) Full time housewife.

(6) Clerical.

(2) Navy (Non-Security Group)

(7) Business/finance.

(3) Navy (Security Group)

(8) Teacher.

(4) Other military.

(9) Other

(5) Professional.

— 98. If your spouse is employed outside the home, to what extent do your PCS moves to different geographic locations cause difficulties with your spouse's employment?

(1) N/A

(4) Moderate impact.

(2) Extreme impact.

(5) Slight impact.

(3) Considerable impact.

(6) Insignificant impact.

The following items deal with a number of factors that may affect your life in the Navy. Regardless of your decision to remain in or to leave the Navy, please indicate how each factor has influenced your Navy career intentions. Use the following scale.

Very Neg Influence	Neg Influence	Has No Impact	N/A No Experience With Factor	Positive Influence	Very Positive Influence
2	3	4	5	6	

W HAVE THE FOLLOWING FACTORS INFLUENCED YOUR NAVY CAREER INTENTIONS?

- 99. Impact of Navy career on home life.
- 100. Navy life in general.
- 101. Sum total of Navy pay in general.
- 102. Shipboard habitability.
- 103. Availability of government housing for your family.
- 104. Availability of drawing BAQ and living ashore.
- 105. Leadership/management effectiveness of your superiors.
- 106. Amount of skilled training received.
- 107. Present performance evaluation system.
- 108. Job security.
- 109. Opportunity to retire at 20 years with benefits.
- 110. Rate of advancement.
- 111. Amount of SRB.
- 112. Recognition for superior performance.
- 113. Fairness of treatment by detailers.
- 114. Attraction of civilian electronics firms.
- 115. The way civilians view Navy enlisted personnel.
- 116. Availability of disireable billets.
- 117. NEC to which assigned.
- 118. Educational opportunities in the Navy.
- 119. Health care and benefits in the Navy.
- 120. The possibility of being assigned PCS to a ship.
- 121. Commissary and exchange benefits.
- 122. Spouse's attitude toward a Navy career.
- 123. The possibility of assuming administrative versus maintenance duties when you reach E-7.
- 124. Superior's emphasis on your mistakes rather than your accomplishments.
- 125. Number of station to station moves.
- 126. Number and location of stations available to you for assignment because of your NEC.

ing the scale below, to what extent are the following statements accurate?

Highly Accurate	Somewhat Accurate	Do Not Know	Somewhat Inaccurate	Highly Inaccurate
2	3	4	5	
127. Not enough training is received for the job to be done.				
128. I did not get the training I was promised.				
129. The training I received does not coincide with the job to which assigned.				
130. I received no training in state of the art equipment.				
131. Training facilities are poor.				
132. I came on active duty strictly to get training for a civilian job.				
133. Skills I learned are easily transferred to civilian occupations.				
134. Friends with the same background and training have found good civilian jobs.				

Using the scale below, to what extent are the following statements accurate?

1	2	3	4	5
I	I	I	I	I
Highly Accurate	Somewhat Accurate	Do Not Know	Somewhat Inaccurate	Highly Inaccurate

- ____ 135. I have seen civilian job referral sheets at my station.
- ____ 136. I have spoken with a recruiter for a job with a civilian firm while still on active duty.
- ____ 137. The availability of free medical and dental care offsets the difference between military and civilian pay.
- ____ 138. There is little likelihood of further technical training in my career.
- ____ 139. The training I received limits me to duty on equipment located at isolated stations or aboard ship.

Please list the three most preferred duty stations or ship types to which you might be assigned.

- 140. _____
- 141. _____
- 142. _____

Please list the three least preferred duty stations or ship types to which you might be assigned.

- 143. _____
- 144. _____
- 145. _____

What do you think are the three most important factors that influence M branchers to continue their Navy careers until retirement?

- 146. _____
- 147. _____
- 148. _____

What do you think are the three most important factors that influence M branchers not to continue their Navy careers until retirement?

- 149. _____
- 150. _____
- 151. _____

Please use the space below to comment on any area you feel has not been adequately covered.

APPENDIX B

STATIONS/COMMANDS IN SURVEY SAMPLE

SHIPS

USS Ranger
USS Saratoga
USS Midway
USS Kittyhawk
USS Nimitz
USS Eisenhower
USS Coral Sea
USS Constellation
USS Forrestal
USS Merrill

COMMANDS AND STATIONS

East Coast/Atlantic

NAVSECSTA
NSGA Northwest
NSGA Winter Harbor
NSGD Norfolk
NSGD Sugar Grove
NSGA Homestead
NTTC Corry Field
NSGA Galeta Island
NSGA Edzell
NCS Rota
NTTC Goodfellow
NSGA Azores
NSGA Augsburg
NSGA Sebana Seca
NSGA Charleston
NSGD Ft. Meade
NSGD Groton

West Coast/Pacific

NCS San Diego
NTC San Diego
NSGA Skaggs Island
NSGA Hanza
NSGA Adak
NAVCAMS WESTPAC
NAVCAMS EASTPAC
NSGA Anchorage
NSGD Pearl Harbor
NSGD Subic
NCS Diego Garcia
NSGD Yokosuka
NSGA Kamiseya
COMSEVENTHFLT
FAIRECONRON ONE (VQ-1)

APPENDIX C

EXCERPTS OF NARRATIVE COMMENTS

JOB SATISFACTION

"While important, money is not the biggest factor for most matmen I have served with, and for me personally, it is not even in the "top ten". A matmen wants to do his job well! To do this he must have: adequate training, appropriate test equipment, accurate and reliable publications, necessary tools and repair parts. In other words, SUPPORT!"

"The Federal Supply System is not responsive to the needs of maintenance personnel. In a priority situation, if the part needed is available from a local commercial source in one or two days, you have to wait two to four weeks for the part to come in."

"Most test equipment in the field today is unreliable and outdated. There is a definite need for new versatile state-of-the-art test equipment to maintain the state-of-the-art systems deployed to the field stations."

"The "Can-Do-Spirit" Syndrome- this syndrome pervades the Navy and irritates the technician to no end. It appears that the majority of the officer community is afraid-yes afraid-to stand up to their superiors and tell them that their command is overtasked and undermanned now. They will not tell their superiors that their command cannot perform additional tasks."

"I feel that an individual is much more influenced by daily facets of his working environment (i.e. division and command posture) than by seemingly distant great plans to entice him. The division chiefs and officers have the most direct and powerful influence on an individual's decision to continue in the Navy."

"Recognition is almost never heard of. If something is done wrong then that is heard but very rarely is help ever given to reduce the deficiencies in skill or knowledge."

"I feel that the area of leadership is the weakest in the attempt to retain personnel. If nothing is done in this area we will continue to promote unqualified people into positions of leadership. A distinction needs to be drawn between technical proficiency and leadership ability."

"I have decided to leave the Navy at the end of my enlistment due to working conditions, the lack of support to do a job (test equipment, replacement parts, training, etc.) and co-workers who have negative attitudes. To me job satisfaction is foremost, but in the Navy I feel I cannot achieve that goal."

"Senior Petty Officers may get the responsibility in line with their grade and experience but in most cases not the authority. Initiative is generally not allowed. Military leadership is indecisive and won't give the authority to someone who will make a decision. Because junior petty officers are junior, their opinions and ideas are generally ignored. I have seen morale decline over the last seven years and was career minded-I am now getting out."

"In general my feeling concerning a Navy career is influenced by the lack of job satisfaction and the work environment. I spend the majority of my time fixing non-electronics items and worrying over the supervision and management of everything from field days to damage control to supply. Come up with a more definitive job description with emphasis on "systems technicians" and you'll get better retention. Assign the non-electronics jobs to other ratings and get the CTM's working more with technical electronic related projects and I believe that you could accomplish the NSG mission with fewer CTM's and achieve better results."

MONEY

"We are not asking to become rich or even upper-middle class, we just want to make a reasonable living. It is impossible at present to even have a savings account. PCS moves every few years wipe out any possible savings in non-reimbursement costs."

"If you want retention of CTM's, pay them what they're worth, like start pro pay again at a good respectable level."

"The only thing I have against the Navy as a career is the fact that a highly trained M brancher who works hard does not get paid what he is worth. In one year, I can make more money than the Navy can pay me to reenlist for 6 years."

"In my opinion Pro Pay is the only possible way of keeping techs in the military, especially computer techs, given the job opportunities in the civilian community. Most corporations now have health care equal to or better than that received in the Navy."

"The Navy has been a place to get maturity, professional training, a college degree and VA benefits. If I did not have to live the life of a third rate citizen when in contact with the civilian community I would stay for 20."

"According to FORBES, 79% of all electronic firms offer medical and dental for employees and dependents at a cost of less than \$200 per year. Given the "quality" of our health care, it doesn't appear to be much of a benny."

"Low pay. Our contemporaries in the civilian electronics community are compensated at a much higher rate over all than we are. A big reason for higher pay in the civilian community is the current job/tech ratio. In ELECTRONICS magazine, (19 July), an article states that, "There's a tremendous market, especially on the west coast, for electronics technicians with 2 year degrees.", confirms Jack Grout, corporate manager of employment and college relations, Hewlett-Packard Co. This demand has hiked salaries of beginning technicians to from \$1000 to \$1500 a month, not that much below beginning graduate electrical engineers, recruiters say."

"I would like to be stationed in the San Diego area however on my present pay I could barely (if at all) afford it. Why no HOLA or COLA in higher cost CONUS areas?"

TRAINING

"The Navy would be wise to adopt a program whereby CTM's that qualify could attend a civilian college. They would then return to the field as actual maintenance supervisors, not paper pushers. Technical expertise of this nature is often needed, but rarely available. What's the point in having an EE qualified EMO who sits at a desk all day? Why not use the training received?"

"I have had 136 weeks of technical electronics maintenance training and a three day P.O. leadership course. It appears to me that on the subject of retention we have the cart before the horse. If we can show the first termer that there is some desire to retain him in the field he chose-maintenance; manage him with people following the career they chose-management. Equip both for the job and we will retain the quality personnel we need to carry out the mission."

"The technician needs a 2-3 week school in supply procedures just to wade through the complexities of the supply system. The Naval Supply System is no longer a "service" organization-it is an enemy."

FAIRNESS

"Being single and not wanting to live in the BEQ for three years here, I put in for BAQ but was refused. I'm 28 and a responsible adult and figured I would get BAQ. I have found however, that each command has different policies concerning BAQ. I've never had it before because I always lived in the BEQ. When an SA can get BAQ in _____ and an E-7 cannot draw it at _____ something is wrong. We have had a chief go to CO mast just to get BAQ; this has upset me greatly and I'll probably get out because of it."

"The selection board process rubs my craw in the wrong direction-if an individual isn't a politician and involved in so many extra-curricular and community activities- he doesn't have time to sleep-he's not promoted to E-7. What is the value of a man who is dependable, always does his job in a professional, efficient manner?"

"I was stationed aboard ship at COMSIXTHFLT for two years. I was then transferred to Rota into a direct support billet that counts as preferred shore duty even though I still go on ships. I was then told I would not be able to receive the school I enlisted for, but an equivalent one-and it would put me out to sea again. If this happens I am out as soon as possible."

"The evaluation system is normally inflated because no one wants to rate someone as average because it will hurt his/her possibilities of advancement."

"Good technicians are interested in good "state-of-the-art" equipment and schooling on that equipment. I myself was never connected with electronics before I enlisted and did not know what type of C school to choose. I guessed (because of an instructor's advice) and took an out of date crypto system. Now I want a new school and I can't get it."

"Lump sum SRB payments to junior personnel tend to aggravate senior petty officers who are not in a position to receive most, if not all, of these monetary benefits."

"There is discrimination in pay between married and single. Marital status should not affect pay. Equal pay for equal work should exist. Married personnel are getting the extra money or better accomodations; they don't get their homes inspected on a regular basis and told what to improve upon."

"The length of sea tour for M-branchers is too long. Only about 5% of M-branchers are at sea, but the tour is the same or longer than some shore tours."

"I feel that too many personnel are being promoted to E5 and E6 when they are not qualified. Too many blanket recommendations."

"People in specialized projects such as Classic Wizard, are locked into a limited number of duty stations. To alleviate this, tours should be available out of the project, after 2 or 3 tours in the project."

"Recently, the quality of new "M" branchers seems to be on a decline. I feel that advancement should be on merit, not time. More stringent evaluations must be made with regard to ability and maturity."

"If I were in a civilian technician job I could work twenty years as a technician, I would be given pay increases based on my ability and not time in service or I could pass a test which really if you look at it, any idiot can pass if he studied a couple of books. Advancement could be based on, (sic) say as I got better at my job I could make more money."

"You advance yourself out of a job when you hit the magic E-7 and it's frowned upon if you even pick up a soldering iron."

"I was a seaman for six months and made E-4. In two years I was an E-5 and made E-6 by five years. All of a sudden I'm supposed to be a leader. All I ever did was work on equipment and the first question I have is, "What the hell am I supposed to do? All people above me ever worry about is haircuts or pressed uniforms and get the job done. Is that what it's all about?"

SOCIAL/FAMILY

"The Navy has treated my wife poorly from the start (after all she wasn't issued to me) and my children not much better. In light of this I'll probably see what I can do as a civilian."

"While I was stationed in Hawaii I found out my two little girls were going to need braces for their teeth. With no dental for dependents there was no way I could afford to get it for them. Now they're going to suffer the rest of their lives because of it."

"To civilians we're substandard citizens. It doesn't bother me so much or my wife what they think. But I've got two kids at school and it really hurts them when the other kids treat them rotten because their father is a sailor and isn't as good as the other kid's father."

"As an E-6 this is the first duty station where I could get government housing. Even so, I had to be separated five months before I could get a house and bring my family here. I feel I am giving the Navy too many sacrifices for the pay I receive. I thoroughly hate being separated from my wife and children and the thought of that highly influences my decision to separate from the Navy."

"Sea duty isn't too bad but it does put a stress on home life that isn't there at a shore command, and my family is too important."

APPENDIX D

DESCRIPTIVE STATISTICS OF DEMOGRAPHIC
AND NON-ATTITUDINAL VARIABLES

VARIABLE	N	MEAN	MEDIAN	ST. DEV.
Marital Status (0=single,1=married)	501	.63	--	N/A
Age	500	25.91	25	4.33
Education	501	12.62	12	1.04
Time in service (years)	500	6.52	5	3.90
Time in grade (months)	500	25.57	18	27.47
Number of children	501	0.79	0	1.08
Reenlistment intent	501	3.17	3	1.66
Hours worked per week				
Sea tour	107	68.04	70	21.90
Shore tour	488	44.75	45	5.93
% Maintenance time				
Sea tour	111	45.85	50	31.47
Shore tour	501	48.01	50	29.71

NOTE: The median was included because it was, at times, a better indicator of central tendency than the mean for two reasons; (1)survey responses were limited to integer values, and (2)skewness caused by a few large values in the data, e.g., time in grade.

APPENDIX E

VARIABLES DIFFERENTIATING AMONG INTENT CATEGORIES

MEAN/(ST. DEV.)

VARIABLE	STAY	UNDEC	LEAVE
Effect of career bonus	3.41 (1.61)	3.90 (0.76)	2.78 (1.36)
Amount of opportunity for interesting duties	3.18 (1.04)	2.73 (0.94)	2.42 (1.01)
Opportunity to grow professionally	3.36 (1.18)	2.97 (1.07)	2.68 (1.21)
Interesting and challenging work	4.00 (1.35)	3.47 (1.17)	2.74 (1.36)
Ability to plan own work schedule	4.28 (1.19)	3.90 (1.24)	3.52 (1.20)
Use of own initiative	3.76 (1.49)	3.73 (1.28)	2.86 (1.37)
Responsibility	4.38 (1.52)	3.83 (1.39)	2.94 (1.30)
Job security	5.64 (1.44)	5.43 (1.38)	4.94 (1.35)
Family stability	2.55 (1.49)	2.17 (1.32)	1.88 (1.12)
Desireable places to live	2.49 (1.24)	2.40 (1.35)	1.73 (1.08)
Recognition/status	3.50 (1.33)	3.10 (1.18)	2.41 (1.07)
Advancement	3.41 (1.41)	3.43 (1.61)	2.49 (1.29)
Perceived attitude of spouse about changes in geo. locations	4.41 (1.54)	3.87 (1.89)	3.34 (1.66)
Perceived attitude of spouse about Navy career in general	4.76 (1.47)	4.10 (1.45)	2.99 (1.47)
Navy life in general	3.09 (0.81)	2.90 (0.76)	2.32 (0.81)
Influence of spouse's attitude toward a Navy career	3.43 (0.90)	2.83 (0.95)	2.50 (1.00)

APPENDIX F

SAMPLE PRINCIPLE COMPONENT FACTOR ANALYSIS¹

Simple correlations and cross-tabulations indicate there were possible redundancies in the data, resulting in groups of variables that could be collinear. This expected finding suggested two strategies for reducing the groups of items into independent explanatory factors:

1. Statistically combine items that are highly correlated to form a composite measure; or
2. Select a single item to represent a group of interdependent variables.

Principle components factor analysis was the method used as an aid in this process. Unlike some of the less-structured factor analytic procedures, this technique provides unique and reproducible results to determine which groups of variables are highly intercorrelated. The calculated components, which are linearly independent, may suggest combinations of items or individual items representing underlying dimensions or constructs in the data, i.e., hypothetical or intuitively appealing "latent" variables that cannot be accurately observed directly. One can determine the relative contribution of each item to a component by using the so-called "factor loadings," i.e., the weighting of the ith item to the jth component. These loadings are the correlations of the item (variable) with the component (factor). These weights are a measure of the degree of collinearity a given survey or background item has with other items in the factor.

¹Descriptive text extracts from Perry, 1977, Appendix B, pg. 73.

The factor loadings can range from +/-1, and the relative contribution of the standardized variable² to the factor is indicated by the absolute value of the coefficient. Thus, using these weights helps one to determine which items or combinations of items "best" represent the suggested factor or construct in the data. It was decided that the measurement error would be significantly reduced by a composite index of several items to represent a construct in the data. The final selection of variables is presented in Appendix G.

²The factored data matrix consisted of the raw-data variables standardized to unit variance and zero mean. Standardization nondimensionalizes the original data matrix.

APPENDIX G

COMPOSITE FACTORS AND CONTRIBUTING VARIABLES

FACTOR AND VARIABLES	FACTOR LOADING
SOCIAL/FAMILY (SOCIAL)	
Impact of Navy career on home life	.679
Spouse's attitude toward Navy	.610
Navy life in general	.584
Sum total of Navy pay in general	.392
Possibility of being assigned PCS to a ship	.328
Number of station to station moves	.327
INTRINSIC (INTJOB)	
Interesting and challenging work	.689
Responsibility	.681
Use of own initiative	.655
Recognition/status	.494
Ability to plan own work schedule	.447
Desireable co-workers	.402
MILITARY FRINGE BENEFITS (EXTJOB)	
Job Security	.767
Commissary and exchange benefits	.606
Health care and benefits	.541
Amount of SRB	.524
Opportunity to retire at 20 years	.423
Rate of advancement	.393
Effect of career bonus	.322
WORK ASSIGNMENT (WRKASG)	
NEC to which assigned	.606
Amount of skilled training received	.545
TECHNICAL VS. MANAGERIAL (MGRTECH)	
Effect of career path choice on career decision	.878
Possibility of assuming managerial duties when promoted	-.717

ADDITIONAL VARIABLES CORRELATING WITH VARIABLES INCLUDED
IN COMPOSITE FACTORS

INTRINSIC

Leadership/management effectiveness of superiors

Quality of supervision received

Recognition for superior performance

Advancement

Amount of opportunity to plan own activities

SOCIAL/FAMILY

Family stability

Desireable places to live

Perceived spousal attitudes about health care

Perceived spousal attitudes about Navy career

WORK ASSIGNMENT

Fairness of treatment by detailers

Availability of desireable billets

Number and location of stations available due to NEC

FACTOR 1	FACTOR 2	FACTOR 3
VARC73 0.62577	-0.16386	-0.13436
VARC74 0.51242	-0.20911	-0.35122
VARC75 0.31766	-0.04971	0.28934
VARC76 0.33477	-0.12425	0.33207
VARC77 0.65429	-0.12425	-0.07267
VARC78 0.69333	-0.14430	-0.24013
VARC79 0.37753	-0.04929	0.12969
VARQ63 0.40510	0.04421	0.16064
VARQ64 0.43445	0.05565	-0.00019
VARQ65 0.45456	-0.05581	-0.30745
VARQ66 0.65138	-0.04924	-0.16247
VARQ67 0.56468	0.04616	-0.19132
VARQ68 0.30436	0.22637	0.01810

VARIABLE	COMMONALITY	FACTOR 1	FACTOR 2	FACTOR 3
VARC73	0.43508	1	3.35748	72.0
VARC74	0.48252	2	0.73775	16.8
VARC75	0.18769	3	0.51887	11.1
VARC76	0.24563			
VARC77	0.47175			
VARC78	0.27575			
VARC79	0.16185			
VARQ63	0.36326			
VARQ64	0.54682			
VARQ65	0.42665			
VARQ66	0.42106			
VARQ67	0.35715			
VARQ68	0.14426			

VARIABLE	COMMONALITY	FACTOR 1	FACTOR 2	FACTOR 3
VARC73	0.43508	1	3.35748	72.0
VARC74	0.48252	2	0.73775	16.8
VARC75	0.18769	3	0.51887	11.1
VARC76	0.24563			
VARC77	0.47175			
VARC78	0.27575			
VARC79	0.16185			
VARQ63	0.36326			
VARQ64	0.54682			
VARQ65	0.42665			
VARQ66	0.42106			
VARQ67	0.35715			
VARQ68	0.14426			

FACTOR 1	FACTOR 2	FACTOR 3
VARC73 0.61229	-0.11356	0.21883
VARC74 0.30913	-0.01561	0.62187
VARC75 0.76055	0.02574	0.76077
VARC76 0.10370	0.01315	0.46214
VARC77 0.61600	0.13156	0.26472
VARC78 0.73210	0.01354	0.29175
VARC79 0.24040	0.01354	0.29345
VARQ63 0.68758	0.52322	0.17247
VARQ64 0.20272	0.07166	0.03607
VARQ65 0.35201	0.11562	0.21080
VARQ66 0.59040	0.24337	0.26001
VARQ67 0.52367	0.27949	0.27375
VARQ68 0.15677	0.31663	0.07943

TRANSFORMATION MATRIX

FACTOR 1	FACTOR 2	FACTOR 3
FACTOR 1 1	0.78127	0.43455
FACTOR 2 2	-0.31479	0.86415
FACTOR 3 3	-0.23905	0.16765

APPENDIX H

RESULTS OF REGRESSION ANALYSIS

(SAMPLE SIZE (n) = 498)

VARIABLE (FACTOR)	REGRESSION COEFFICIENTS B	CORRELATION BETA	F-STATISTIC* COEFFICIENT
Intrinsic	.572	.295	.454
Social/ Family	.613	.308	.404
Extrinsic	.455	.224	.313
Work Assignment	.430	.200	.295
Technician/ Manager	.140	.077	.083
(Constant)	3.166		

R SQUARE = .393 MULTIPLE R = .627 OVERALL F = 63.55*

*Significant at levels less than .001

APPENDIX I

VARIABLES SIGNIFICANTLY CORRELATED WITH INTENT TO REENLIST
(Significant at levels less than .001)

<u>VARIABLE</u>	<u>r</u>	<u>VARIABLE</u>	<u>r</u>
General attitude toward Navy career	.506	Use of initiative	.311
Age	.481	Time in grade	.310
Navy life in general	.448	Working environment	.302
Opportunity for interesting duties	.424	Desireable places to live	.300
Opportunity to retire at 20 yrs. with benefits	.420	Number of children	.292
Responsibility	.411	Advancement	.284
Interesting and challenging work	.396	Changes in geographic location	.283
Morale	.395	Leadership/mgmt. effectiveness	.281
Recognition/status	.386	Ability to plan own work schedule	.257
Career bonus	.373	Fairness of treatment by detailers	.256
Spouse's attitude toward a Navy career	.327	Job security	.254
Opportunity to grow professionally	.318	Performance evaluation system	.254
Impact of Navy career on home life	.315	Family stability	.249
Opportunity for challenge	.314		

LIST OF REFERENCES

Bruni, J.R., Jones, A.P., & James, L.R. Correlates of First Term Reenlistment Behavior Aboard Navy Ships (Tech. Rep. 75-8) Fort Worth, Tex.: Texas Christian University Institute of Behavior Research, 1 May 1975.

Brunner, G.L., The Importance of Volunteer Status: An Analysis and Reliability Test of Survey Data (R-717-PR) Santa Monica, California: Rand Corporation. December 1971.

Bureau of Labor Statistics, 1978 Occupational Outlook Handbook.

Carlisle, Rayon Hughes, Jr., An Investigation into the Job Factors Affecting the Reenlistment of Marines in the Telecommunications Field, M.S. Thesis, Naval Postgraduate School, Monterey, California, 1975.

Cook, Virgil Griffith, Jr., Naval Aviator Retention: Predicting Retention and Identifying Related Variables, M.S. Thesis, Naval Postgraduate School, Monterey, California, June 1979.

Dansereau, F., Jr., Cashman, J., & Graen, G. "Expectancy as a Moderator of the Relationship Between Job Attitude and Turnover." Journal of Applied Psychology, 1974, 59, 228-229.

Department of the Navy, Bureau of Personnel Instruction 1133.25D, Career Reenlistment Objectives (CREO), 26 August 1977.

Enns, J.H., Reenlistment Bonuses and First-Term Retention (R-1935-ARPA) Santa Monica, California: Rand Corporation, September 1977.

Frey, R.L., Jr., Goodstadt, B.E. Romanczuk, A.P., Glickman, A.S. Reenlistment Incentives: More Is Not Better In the Fleet Either (Tech. Rep. 4), Washington, D.C.: American Institutes for Research, June 1974.

Fruchter, Benjamin, Introduction to Factor Analysis. Princeton, New Jersey: D. Van Nostrand Company, Inc. 1954.

Glickman, A.S., Goodstadt, B.E., Korman, A., & Romanczuk, A.P. Navy Career Motivation Programs in an All-Volunteer Condition: I.A. Cognitive Map of Career Motivation (Tech. Rep.). Washington, D.C.: American Institutes for Research, March 1973.

race, G.L. Techniques for Increasing Retention of Enlisted Personnel. Paper presented at Rand Conference on Defense Manpower, 4-6 February 1976, proceedings in press.

race, G.L., Holoter, H.A., & Soderquist, M.I. Career Satisfaction as a Factor Influencing Retention (Tech. Rep. 4, TM-5031/004/00). Santa Monica, California: System Development Corporation, 14 May 1976.

aber, Sheldon E. and Stewart, Charles T., Jr., The Responsiveness of Reenlistment to Changes in Navy Compensation.

air, Joseph F., Jr. and others, Multivariate Data Analysis Tulsa, Oklahoma: Petroleum Publishing Company. 1979.

and, H.H., Griffeth, R.W., Mobley, W.H. Military Enlistment Reenlistment and Withdrawal: A Critical Review of the Literature. Center for Management and Organizational Research, University of South Carolina, December 1977.

erzberg, F. and others, The Motivation to Work. New York: John Wiley and Sons, 1959.

om, Peter W. and Hulin, Charles L. A Comparative Examination of Four Different Approaches to the Prediction of Organizational Withdrawal (Technical Report 78-5). University of Illinois, December 1978.

ulin, C.L., Effects of Community Characteristics on Measures of Job Satisfaction. Journal of Applied Psychology, 1966 50, 185-192.

oehler, Ernest A. Life Cycle Navy Enlisted Billet Costs-FY 79 (NPRDC SR 79-13). Navy Personnel Research and Development Center, March 1979.

raut, A.I. Predicting Turnover of Employees from Measured Job Attributes. Organizational Behavior and Human Performance, 1975, 13, 233-243.

raut, A.I., & Ronen, S. "Validity of Job Facets Importance: A Multi-National Multi-Criteria Study." Journal of Applied Psychology, 1975, 60, 671-677.

Rocco, J.N., Gunderson, E., & Pugh, W.N. Prediction of Reenlistment: A Discriminant Analysis Approach (Rep. No. 75-21). Navy Bureau of Medicine & Surgery, 1975.

awler, Edward E., Pay and Organizational Effectiveness; A Psychological View, McGraw Hill. 1971.

lockman, R.F., Stoloff, P.H., & Allbritton, A.S. Motivational Factors in Accession and Retention Behavior (Res. Contrib. 201). Center for Naval Analysis, Institute for Naval Studies, Jan. 1972.

Maslow, A.H. Motivation and Personality. New York: Harper & Bros., 1954.

An Evaluation of the Mobley, Horner, Hollingsworth Model of Employee Turnover: Validation Data and Suggested Modifications (Technical Report 79-1). University of Illinois, January 1979.

orion, Anton S., "Predicting the Impact of Policy Changes From Surveys", Proceedings TIMS Meeting, San Francisco, California, 1965.

lie, N.H., Hull, C.H., Jenkins, J.G., Steinbrenner, K. & Bent, D.H. Statistical Package for the Social Sciences. New York: McGraw-Hill, 1975.

Norrblom, Eva M. The Returns to Military and Civilian Training (R-1900-ARPA). Santa Monica, California: Rand Corporation, July 1976.

Perry, Wayne D. First Term Reenlistment Intentions of Avionics Technicians: A Quantitative Analysis (R-2152-ARPA). Santa Monica, California: Rand Corporation, October 1977.

Porter, L.W., & Steers, R.M. Organizational, Work, and Personal Factors in Employee Turnover and Absenteeism. Psychological Bulletin, 1973, 80, 151-176.

Quigley, John M. and Wilburn, Robert C. An Economic Analysis of First Term Reenlistment in the Air Force (Personnel Research and Analysis Division, Directorate of Personnel Planning, 69-017). Headquarters USAF, 1969.

Stoloff, P.H., Lockman, R.F., Allbritton, A.S., & McKinley, H.H., Jr. An Analysis of First-Term Reenlistment Intentions (Res. Contrib. 232). Center for Naval Analyses, Institute of Naval Studies, November 1972.

Vroom, V.H. Work and Motivations. New York: Wiley, 1964.

Waters, L.K., & Roach, D. "Relationship Between Job Attitudes and Two Forms of Withdrawal From the Work Situation." Journal of Applied Psychology, 1971, 55. 92-94.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Cameron Station
Alexandria, Virginia 22314 2
2. Defense Logistics Studies Information Exchange
U.S. Army Logistics Management Center
Fort Lee, Virginia 23801 2
3. Library, Code 0142
Naval Postgraduate School
Monterey, California 93940 2
4. Department Chairman, Code 54
Department of Administrative Science
Naval Postgraduate School
Monterey, California 93940 1
5. Professor Richard Elster, Code 54 Ea
Department of Administrative Science
Naval Postgraduate School
Monterey, California 93940 3
6. Asst Professor D. Rousseau, Code 54 Rs
Department of Administrative Science
Naval Postgraduate School
Monterey, California 93940 1
7. MAJ Anthony H. Mirra III, USA
2810 Springfield Road
Broomall, Pennsylvania 19008 1
8. LT Richard Patrick O'Neill, USN
Headquarters, Naval Security Group
3801 Nebraska Avenue N.W.
Washington, D.C. 20390 1
9. Commander, Naval Security Group
3801 Nebraska Avenue N.W.
Washington, D.C. 20390 1
10. Deputy Chief of Naval Operations
(Manpower, Personnel and Training)
Chief of Naval Personnel, OP-01,-10,-11,-12,-13
Arlington Annex
Columbia Pike and Arlington Ridge Road
Arlington, Virginia 20370 5

Thesis 187009
0579 O'Neill
c.1 Identification of
variables related to
the reenlistment in-
tentions of Navy cryp-
tologic technicians
(maintenance).

thes0579

Identification of variables related to t



3 2768 001 97343 1
DUDLEY KNOX LIBRARY